FLASHES AND PLUGS

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By whistling, the natives are able to overcome this difficulty and can convey to each other messages of considerable complexity.

Just to test the system, one man recently asked the whistler across the mountain to send a runner for a special package. After some time, he did arrive.

The whistlers use melodies based on several notes only, and this language is known only by the country people. Those who live in the towns do not understand what is being said.

This method of communication is still used in spite of the installation of telephones. It comes in very handy during the rainy season, though, when communications facilities are frequently interrupted.

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"I'm sorry," said the desk man. "Your husband is in a meeting and can't be called out. Is it something important?"

"Well yes," said the woman, "there's smoke pouring out of the basement and I want him to come home and put out the fire."

Her call was transferred to the fire department.

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Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

October 2, 1954

Contents

HOT GAS WELDED SPLICES FOR ANKOSEAL TELEPHONE CABLE 17
By A. D. Varenelli and E. R. Kerwin

THE PLANT MAN'S NOTEBOOK 20
By Ray Blain

THE OPERATOR'S CORNER 21
By Mayme Workman

IN THE NATION'S CAPITAL 24
By Francis X. Welch

FACTORS IN THE SELECTION OF TELEPHONE CARRIER SYSTEMS—Part 2 26
By Harold R. Huntley

COURTS AND COMMISSIONS 34

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Hot Gas Welded Splices

for Ankoseal Telephone Cable

By A. D. VARENELLI and E. R. KERWIN*

OUTSIDE telephone cable plant was substantially all paper lead cable in the Independent industry prior to the development of Ankoseal plastic insulated and jacketed telephone cable. The standard splice closure used on lead cable was a lead sleeve wiped to the sheath.

An entirely different splicing approach was necessary on plastic cable since wiped lead joints could not be used on the plastic sheath. Concurrently with the design and development of the first all plastic Ankoseal telephone cable, the need for reliable and practical splicing methods was recognized and studied. As a result, procedures were established for a tape type and also for lead sleeve type splices.

After more than six years of extensive use, both methods have an excellent performance record. The tape type splice has been used in the majority of installations because many telephone companies were able to use their regular linemen to make cable splices without having to go to the extra expense of hiring outside splicers to wipe lead sleeve joints. There have been no basic changes in the original techniques recommended for tape and lead sleeve splices. A few years ago, however, nonhygroscopic and materials with improved aging properties were introduced to provide even greater service reliability.

Mr. Varenelli is chief chemist and Mr. Kerwin is development engineer of the Ansonia Wire & Cable Co. of Ansonia, Conn.

The hot gas welding method for splicing Ankoseal telephone cable was developed to provide a continuous covering over a splice made from the same material as the plastic jacket. The procedure described is the result of long-term laboratory, field research and engineering studies conducted on the installation and maintenance of Ankoseal cable.

Several years were required to complete these studies and verify the established methods in actual field installations. This plastic sleeve type closure can be used for straight, bridge and split sleeve splices. However, it must be made clear that the hot gas welded splice is definitely an additional method for closing plastic telephone cable splices and is not a replacement for the tape and lead sleeve type splices. Such splices are still recommended for small cable installations where the welding equipment cost cannot be justified, or in those cases where the splices must be made and the welding equipment is not available.

Plastics have been welded for many years and equipment was readily available for this purpose. The practices employed in the hot gas welding of plastics are very similar to metal brazing except the plastic materials do not become soft enough to flow and, therefore, the filler rod must be laid in position under moderate pressure against the surface or surfaces that have been softened at the same time as the rod. The welding area and filler rod are heated to the same temperature by moving the stream of gas to contact all surfaces so that they are softened to the same degree before the rod is pressed into position.

This can be accomplished readily by concentrating the hot gas over a small area and progressively moving along the weld at a uniform rate. Usually the rod will be perpendicular to the weld or inclined slightly away from the direction of travel, however, the angle depends largely on the stiffness of the rod. The best results are obtained by using a filler rod, spacer and sleeve with the same composition as the jacket on the cables to be spliced. This means that they will all soften at the same temperature and result in a strong weld with a uniform cross-section.

The hot gas welding can be performed with any relatively inert gas such as air, nitrogen or carbon dioxide. The nominal settings recommended for the gas pressure, and the voltage to be applied to the gun, provide the proper working temperature of the hot gas subject to such adjustments as may be found necessary to meet particular field conditions. The temperature employed should not be too high, nor should the hot gas be held on a single point too long without moving the gun slightly as the heat is applied. Excessive gas pressure will distort the softened plastic and result in weak weld sections.

A setting of 20 psi is recommended for the usual conditions. Temperature adjustments on the gun are made by

adjusting the voltage control on the powerstat. Nominally an 80-volt value will be required. *Fig. 1* gives the relationship of voltage and pressure to the temperature of the hot gas jet one quarter of an inch from the nozzle tip for compressed air. These values will vary slightly for other gases due to different heat capacities.

The equipment required to make hot gas welded splices in the field is shown in *Fig. 2*. This portable unit includes a gasoline driven 1,000 or 1,500-watt generator, air compressor belt driven

Fig. 2

by generator, pressure regulator, powerstat and hot jet welding gun with the required length of hose and extension cord. Normally, the gun is equipped with a straight nozzle, however, a 45-degree nozzle appears to be best suited for this purpose since it can be more easily manipulated around the entire cable. A small cylinder of dry nitrogen with pressure regulator, a Zerk or similar fitting attached to a flexible hose and a suitable soap solution are needed to check the completed splice for leaks. A three-sixteenth inch boring tool is used to make the test hole in the sleeve to pressure test the splice.

The plastic splicing sleeve size required will depend on the cable size and the technique used by the splicer in making the splice. The sleeve size should be as small as possible to keep the welding operations to a minimum. The plastic filler rod should be approximately three-sixteenths inch diameter. The plastic spacer strip should be wide enough to accommodate the straps used to support the completed splice and a strip 1½ inches to 2 inches wide and .050 inch thick is recommended. It may be pointed out that in cases where a large number of the same size splices are to be made, a specially designed molded split spacer of the proper size could be substituted for the spacer strip. Ordinarily, however, with varying size cables to be spliced, the supply problem will be simplified by using the strip material to build up the spacer to the diameter required to fit inside the sleeve.

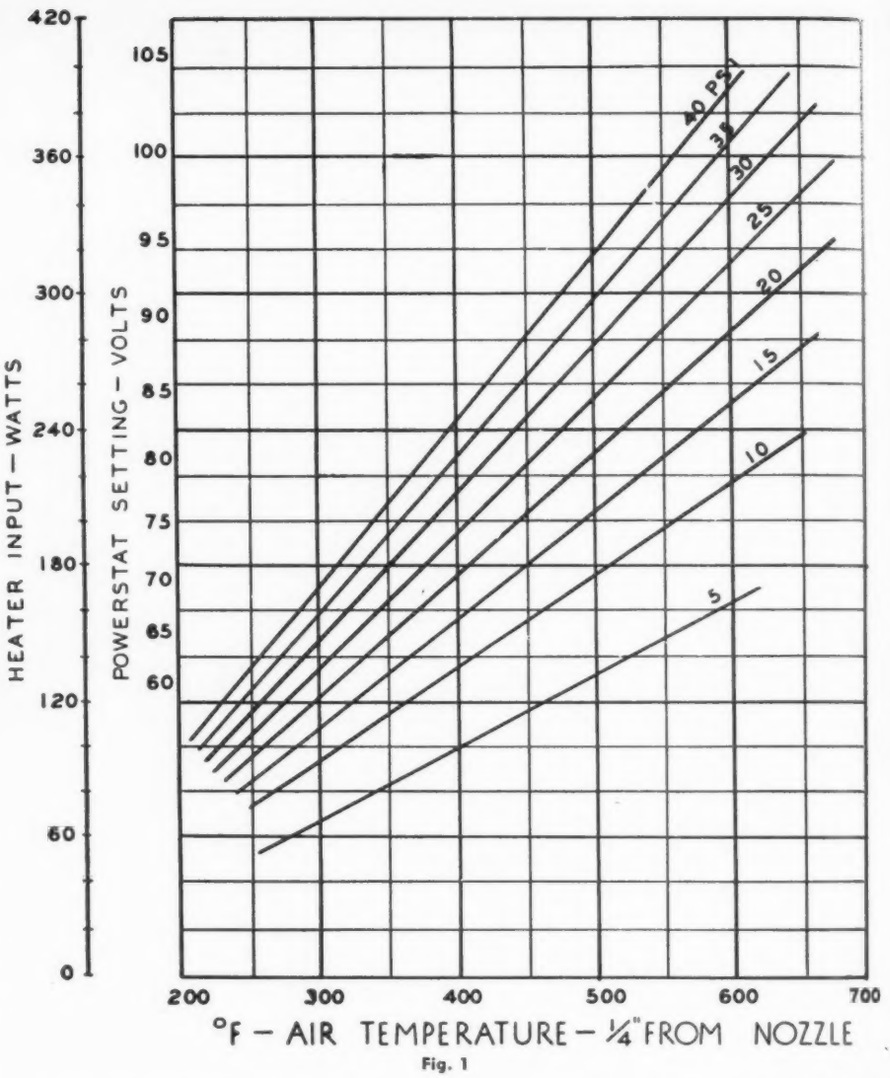


Fig. 1

A hot gas welded straight splice can be made on Ankoseal telephone cable by following the steps outlined below:

(1) Overlap the cables. Slip a plastic sleeve of the proper size and length over the end of one cable and push back out of the way. The sleeve should be approximately 6½ inches longer than the splice opening. Secure cables and splice conductors in the conventional manner.

(2) Weld end of spacer strip approximately 2 inches from the end of the jacket as shown in *Fig. 3*.

Fig. 3

(3) Wrap the spacer strip around the jacket the required number of times to build the spacer up to the inside diameter of the sleeve and weld end of

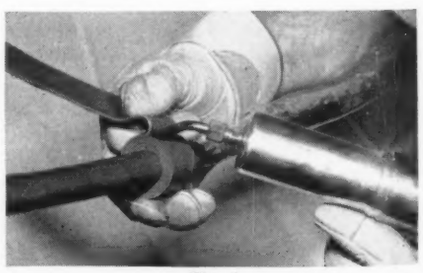


Fig. 4

Fig. 5

spacer as shown in *Fig. 4*. Cut off excess spacer strip and smooth out the end as shown in *Fig. 5*. Weld the outside edges of the spacer strip together. The sleeve should fit on the spacer as

snugly as possible and still permit the sleeve to be moved into position without too much difficulty.

(4) Place another spacer on the other end of the splice by repeating steps described above.

(5) Slip the sleeve into position with the ends of the sleeve approximately ¼ inch from the end of the spacer as shown in *Fig. 6*.

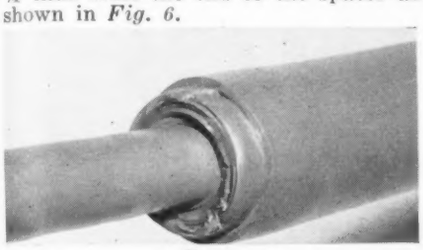


Fig. 6

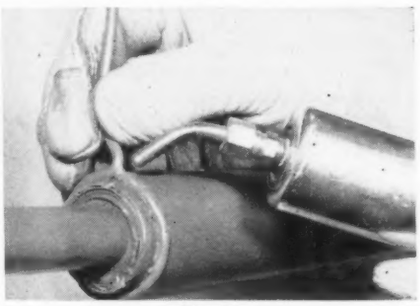


Fig. 7

(6) Weld filler rod to spacer and sleeve as shown in *Fig. 7*.

(7) Weld filler rod to jacket and spacer and continue until filler rod meets the first weld made with the rod between the spacer and sleeve as shown in *Fig. 8*. The welded end section can

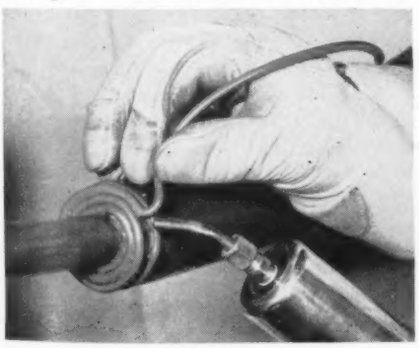


Fig. 8

Fig. 9

be dressed by heating a small area at a time as shown in *Fig. 9* and pressing down with gloved thumb until the finished splice has the appearance shown in *Fig. 10*.

(8) The filler rod should be welded to sleeve, spacer and jacket on the

Fig. 10

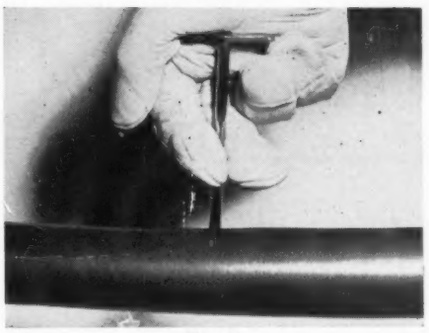


Fig. 11

other end of splice in the same manner as described above.

(9) The completed splice can be pressure tested with 20 psi of dry nitrogen by piercing a 3/16 inch hole in the sleeve with a boring tool as shown in *Fig. 11*. Press a Zerk or equivalent fitting against the hole as illustrated in *Fig. 12* and check for leaks on each end of the splice with a standard soap solution. The pressure should be applied for approximately three minutes. Leaks can be repaired by welding additional filler rod in the area of the leak. All repaired splices

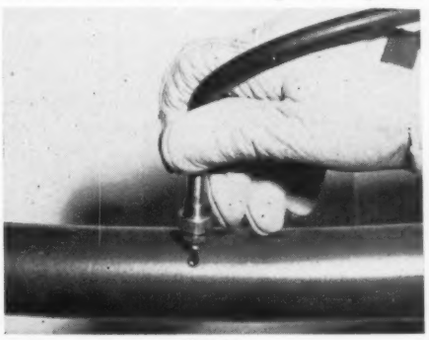


Fig. 12

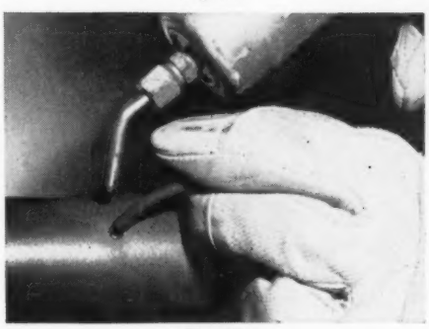


Fig. 13

should be rechecked with pressure. Seal the test hole by heating the sleeve section around the hole and a piece of filler rod as shown in *Fig. 13*. The filler rod should be of the proper diameter to fit the hole snugly. The rod should be inserted into the hole when both the sleeve and rod have been softened sufficiently by the hot gas. Cut off the excess rod with a knife. Heat the rod and sleeve simultaneously with the hot gas and flatten out the small protuberance of rod by applying pressure with the thumb.

(10) Support the splice on each end with the straps attached to the sleeve over the spacers. Wide spacers were provided for this purpose.

A hot gas welded bridge splice on Ankoseal telephone cable can be made in the following manner:

(1) Overlap the cables. Slip a plastic sleeve of the proper size and length over the end of the cable and push back out of the way. The sleeve should be approximately 6½ inches longer than the splice opening. Secure cables and splice conductors in the conventional manner.

(2) Weld the main cable and branch cable together starting 2 inches from the end of the jackets and extending for a distance of 1½ inches minimum. Hold the two cables apart and direct the hot gas with a slight motion of the gun on both jackets as shown in *Fig. 14*. When the jackets have been softened sufficiently, press the two cables together and hold for 20 to 30 seconds.

Fig. 14

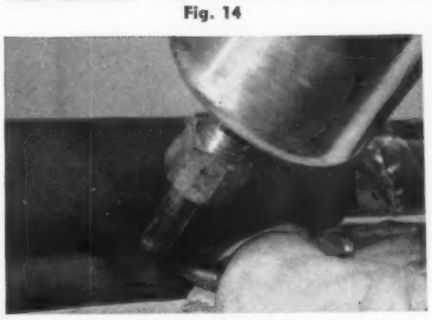


Fig. 15

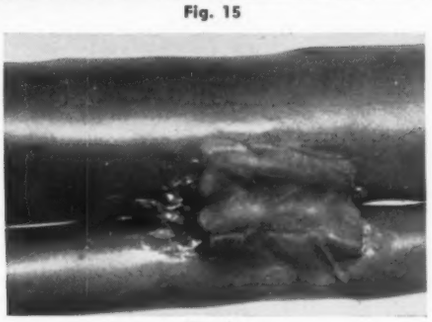


Fig. 16

(3) Build up the valley between the cables where they have been welded together with filler rod. The filler rod must be placed between the cables as shown in *Fig. 15* and pressure applied to the rod to obtain a tight seal. Continue welding filler rod in this area until the entire space is filled as shown in *Fig. 16*. The contour of the filled section should permit a tight fit of the spacer strip against the built-up area and cable jackets.

(4) Place spacer strip onto the two

(Please turn to page 31)

THE PLANT MAN'S Notebook

by Ray Blain, Technical Editor

WE HAVE OBSERVED some disagreement lately between central office equipment engineers as to the best method to lay out an automatic exchange. Some prefer that the main frame and the test desk be placed in a separate room; also, that the power switchboard, the charging equipment, and the storage battery be located in a special room.

Personally we are of the opinion that the most efficient arrangement for an automatic exchange up to 5,000 lines is to have all of the switching equipment, power and main frame in one large room. Not only will this arrangement prove more efficient from a maintenance standpoint, but it will also reduce the building cost considerably. At any rate, that is our idea and we will welcome the opinions of our readers.

• • •

Colonel Hirsch, of the Gustav Hirsch Organization, informed us the other day that his company first discovered the word THINK as a slogan, that others have since adopted it, but they were first.

This is not as far-fetched as one might think as we remember that this company handed out neatly framed signs at telephone conventions several years ago with one word on them: THINK. There is no doubt that thinking at all times is necessary, especially in the telephone business. We are certain, too, that a constant reminder to think will never do any of us any harm.

• • •

We have all heard numerous amusing incidents about the wrong number telephone calls which are not nearly as frequent as the daily press and joke writers would make us believe.

The best, in our opinion, is about a man in Paris whose number got crossed with the telephone company's repair service. After much delay in clearing the trouble, he hit upon a plan.

Whenever someone told him a telephone wasn't working properly, he gave advice in a grave, official tone: "Place the instrument in a pail of warm water, and leave it there for an hour." This action was perhaps a bit drastic, but we understand that it brought prompt action from the company.

• • •

We note with interest that the use of plugs and jacks on residence telephones is on the increase throughout the country. This, we believe, is in keeping with present-day living habits and it adds much to the convenience of telephoning.

For example, an outside jack, perhaps on the patio, serves a real purpose and prevents lost calls during the summer months when outdoor living proves so popular. Then, a jack in the bedroom provides a convenient place to make an important call when the house is full of noisy company.

There are numerous locations in the average residence where jacks prove a real convenience. Plugs and jacks cost very little, but the payoff in better service is truly worthwhile.

• • •

We are admonished by AT&T's *Long Lines* not to underestimate our old friend the coin telephone, as a source of increased long distance revenue. Although there are today 800,000 of them, this number represents only about 2 per cent of the total telephones in service. Yet these coin telephones bring in 7 per cent of the total Bell System revenues.

This same article also informs us that the first telephone booth was made of blankets. In his book, "Exploring Life," Thomas A. Watson, Bell's assistant, relates that in one of the telephone inventor's early demonstrations there was to be a call placed by him from New York to Watson in Boston on the night of Apr. 2, 1877.

In these days, it took a pair of strong lungs and a loud voice to carry on a telephone conversation that could be heard and understood. To keep his shouting from annoying his landlady, Mr. Watson "cast about for some device to deaden the voice." He goes on to say:

"Time was short and appliances scarce, so the best I could do was to take the blankets off our beds and arrange them in a loose tunnel on the floor with the telephone tied up in one end and a barrel hoop in the other end to facilitate my access to the mouthpiece."

In Alaska recently we inquired as to why the telephone booths were larger than the conventional variety. We were advised that this is necessary so that users in the winter time are not required to remove their parkas or other heavy clothing to make a telephone call. It would be impossible for a large man to get into the conventional size booth wearing heavy clothing.

• • •

We are definitely in favor of the outdoor type telephone booth to house public telephones for we are certain that they fill a long neglected need. However, we do believe that these booths should all be lighted in some manner when they are supposed to be used by the public at night.

We attempted to use one recently that was equipped with a dial telephone, but unlighted. It is certainly not a simple task to look up a telephone number in the dark and then dial by match light.

• • •

It has been said that one of the great things about living in a democracy is that we have complete control of how we shall pay our taxes—cash, check or money order.

The OPERATOR'S CORNER

by MAYME WORKMAN, Traffic Editor

IN THIS WEEK'S series of questions, we have several relating to the early history of the telephone, a subject that is always of interest to the writer, who has been engaged in the industry for many years. So, in answering these questions, I shall indulge in a little reminiscing.

In the early 1900's, our country was entering the era of big business. William McKinley was president of the United States and Theodore Roosevelt was vice president. Teddy Roosevelt became the head of the nation in 1901 when McKinley was assassinated at the Buffalo Exposition. He launched his fight against the big combinations of capital known as "trusts"—a fight that continues to this day under the anti-trust statutes.

About this time the telephone was playing an important role in the struggle for public patronage. By reason of its fundamental patents, the Bell System had enjoyed a complete monopoly of telephone service, and had practically confined its operations to the large cities, which was logical, as the industry needed plenty of capital for expansion.

When the Bell patents expired in 1894, the Independent telephone movement was born in the Middle West. There was an urgent demand for service in smaller towns; local exchanges were organized and enterprising manufacturers were soon supplying the necessary equipment. Old-timers in the industry will remember this era as the period of "The Big Fight." There were claims of patent infringement, court actions, franchise attacks, and even burning of competitive equipment on the public square.

The operators felt the impact of this tension, too, and there was a feeling of estrangement, to put it mildly, between operators working in Bell and Independent exchanges in areas where both companies were operating. The war between the two factions continued for about 20 years, when a truce was declared and both sides agreed that it was more sensible to "live and let live." Today, we are enjoying wonderful relations between Bell and Independent companies and their employes.

The new generation of telephone folk take the cordial and cooperative present-day relations between Bell and Independent companies for granted. Recollection of the ancient arguments probably sound as strange to their ears as some of William Jennings Bryan's speeches about "free silver." But the old-timers in the telephone industry recall that in the competitive era, both sides took a keen delight in twisting the other's tail, the idea being to get the other fellow over a barrel.

In the early 1900's, the operator's mode of attire in the majority of offices was a personal matter, but a few managers insisted on uniforms of black skirts and white shirtwaists in warm weather, replaced by black shirtwaists in winter. Later, in some offices, black dresses with white collars and cuffs and white aprons were uniform. In some offices, bows in the hair were forbidden (I remember that one), as were bracelets and excess furbelows which interfered with operating the switchboard.

Operating rules were also introduced in the early 1900's which supervisors were expected to learn word for word, and chief operators and supervisors were appointed to assist operators in their work and to do the necessary training.

The moral health of the employes also became a matter of concern about this time, on the part of the management of some of the telephone companies, and rules were published prohibiting the use of profanity or intoxicating drinks, and cigarette smoking was strictly forbidden. According to the rules, no man or boy who used cigarettes was permitted to remain on the company's payroll. The possibility of girl operators smoking never entered the minds of these early telephone company managers.

Depressions were not unknown in the early days of telephony and a depression was in progress at the time the telephone was invented. This depression was an aftermath of the Civil War and over-expansion of the railroads. Banks and businesses all over the country were collapsing. The East was left badly off by the too-rapid settlement of the public lands in the West. Strikes and financial panics were commonplace. To sell even every-day necessities was a difficult job.

People who attended lecture demonstrations of the astonishing new instrument which carried human voices over several miles of wire, found them highly entertaining; but men were embarrassed as well as delighted when invited to speak into it as the coming means of communication. A popular magazine of that era, "The Youth's Companion," offered a telephone as a premium for a new subscription and almost anyone felt qualified to make improvements in the new invention.

A crop of jokes and telephone cartoons also appeared. These usually dealt with a telephone user who was both surprised and angered to find his telephone speaking some language other than his own, or with a servant who, wishing to save his employer any inconvenience, cut the telephone cord when the bell rang, and carried the instrument to where the employer was.

Early in 1878, the Chicago *Journal* irreverently suggested: "Now that the telephone makes it possible for sounds to be canned the same as beef or milk, missionary sermons can be bottled and sent to the South Sea Islands, ready for the table, instead of the missionary himself."

A sermon by Henry Ward Beecher, the highest-paid public orator in the country at that time was, as a matter of fact, not exactly bottled, but tele-

(Please turn to page 44)

experience

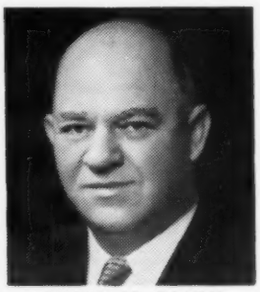
the backbone of telephony

A vast amount of on-the-job experience pays off for customers in the management of all of America's telephone companies. The leaders come up from the ranks. Step by step, and job by job, they learn how to provide the world's best telephone service. This is important to telephone users, of course. It is also important to ambitious men and women planning careers in the business.

The advertisement across the page tells this double story to millions in October magazines that reach the territories of each of the nation's 5100 telephone companies.

CLEO F. CRAIG
President of the American Telephone and Telegraph Company. Started as an *equipment man* in St. Louis in 1913 at $15 a week.

ALLERTON F. BROOKS
President of The Southern New England Telephone Co. Started as *engineer's assistant* in New Haven in 1911 at $12 a week.



EDWIN M. CLARK
President of the Southwestern Bell Telephone Company. Started as an *installer* in New York in 1923 at $30 a week.

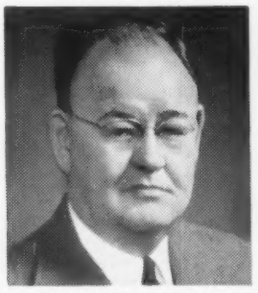
SANFORD B. COUSINS
President of the Northwestern Bell Telephone Co. Started as a *traffic student* in New York in 1920 at $30 a week.

WILFRED D. GILLEN
President of The Bell Telephone Co. of Pennsylvania. Started as a *clerk* in Philadelphia in 1923 at $27 a week.

JOHN A. GREENE
President of The Ohio Bell Telephone Company. Started as a *contract clerk* in Chicago in 1914 at $50 a month.

HARRY S. HANNA
President of the Indiana Bell Telephone Company. Started as an *engineer* in Cleveland in 1922 at $57 a week.

JOE E. HARRELL
President of the New England Telephone and Telegraph Co. Started as a *clerk* in Atlanta in 1913 at $14 a week.



WILLIAM A. HUGHES
President of the New Jersey Bell Telephone Co. Started as a *groundman* in Kansas City, Mo., in 1917 at $60 a month.

WILLIAM V. KAHLER
President of the Illinois Bell Telephone Co. Started as an *engineering assistant* in New York in 1922 at $25 a week.

FREDERICK R. KAPPEL
President of the Western Electric Company. Started as a *groundman* in Minneapolis in 1924 at $25 a week.

WALTER K. KOCH
President of Mountain States Telephone & Telegraph Co. Started as *traffic student* in Denver in 1923 at $100 a month.

Up from the Ranks

These are the presidents of the companies in the Bell System. They all started in the ranks.

Seventeen years ago the Bell System first published an advertisement like this. But there is a big difference today. Every one of the faces is new.

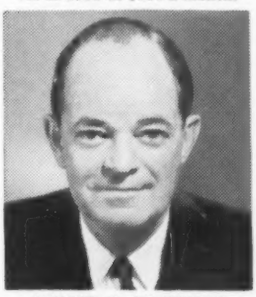
All of these presidents, like those before them, have had wide telephone experience—an average of 34 years in the Bell System and 18 years in upper management positions.

The Bell System is an up-from-the-ranks business and it aims to keep the opportunity for advancement open to all.

This has been true of the telephone business for many years and it is nowhere better illustrated than in the careers of the men who serve as presidents of Bell System companies.

BELL TELEPHONE SYSTEM

DR. MERVIN J. KELLY
President of the Bell Telephone Laboratories. Started as a *physicist* in New York in 1918 at $40 a week.



KEITH S. McHUGH
President of the New York Telephone Company. Started as a *clerk* in New York in 1919 at $35 a week.

JAMES B. MORRISON
President of Chesapeake & Potomac Telephone Cos. Started as *engineering assistant* in Washington in 1925 at $27 a week.

CLIFTON W. PHALEN
President of the Michigan Bell Telephone Company. Started as a *lineman* in Syracuse in 1928 at $30 a week.

MARK R. SULLIVAN
President of The Pacific Telephone and Telegraph Company. Started as a *clerk* in San Francisco in 1912 at $50 a month.

FRED J. TURNER
President of the Southern Bell Telephone and Telegraph Co. Started as a *clerk* in Atlanta in 1907 at $18 a month.

CHARLES E. WAMPLER
President of the Wisconsin Telephone Company. Started as a *traffic student* in Chicago in 1929 at $130 a month.

★ ★ ★ IN THE ★ ★ ★ NATION'S CAPITAL

by FRANCIS X. WELCH — WASHINGTON EDITOR

FCC-proposed rule would allow TV stations to operate own intercity relay systems. Reports study of population trend to suburbs and implications for Independents. Re-examination ordered of New England T&T rate case in Massachusetts. Names leading contender for FCC vacancy.

INDEPENDENT as well as Bell telephone companies stand to lose a substantial amount of revenue now being received for furnishing relay service for transmitting TV programs between cities if a proposed FCC rule is allowed to go into effect. Under the present rules TV stations are supposed to use "common carrier" (telephone or telegraph) facilities whenever available for such service, in order to take unnecessary traffic off the TV air channels. Now along comes a tentatively proposed rule of the FCC to change all this. Commissioners Hyde, Webster, Hennock, Bartley and Lee gave it preliminary approval on Sept. 16.

Under this proposed rule, TV stations could apply for construction permits to operate their own intercity relay systems by showing that the cost of alternative relay service, from the telephone or telegraph facilities available in the area, was too expensive as compared with the cost of erection and operating a privately owned TV system. Who would decide this? The FCC.

This standard of comparison is tantalizingly vague. The proposed rule does not say that the FCC will automatically allow the TV station to put up its own facilities—if the job could be done cheaper that way, as compared with the price of the telephone company's service. That would at least be a definite dollars-and-cents standard, however difficult it would be to use that alone as a fair or logical reason for reversing or departing from the earlier FCC policy. That policy is based on the theory of conserving the radio spectrum by requiring the utilization of land wire or common carrier facilities wherever possible.

But the proposed rule leaves the final say-so to the FCC's discretion in each case, "where, in the opinion of the commission, the cost of common carrier facilities compared to the cost of constructing and operating private intercity relay facilities justifies such action." In other words, the FCC might turn down a TV station in one case even where it could do its own work cheaper, and let the TV station go ahead in another case where private construction would be more expensive than service from the telephone company. This lack of definition is going to be hard on both the telephone companies and the TV stations. If there are other factors or standards involved (such as population density, etc.), they could at least be evaluated in the rule.

The USITA is watching this closely. Very likely the FCC will receive plenty of comment before the proposed rule goes into effect.

The FCC notice was in the form of an invitation for comment on a rule proposed by the North Dakota Broadcasting Co. which would allow television broadcasters to operate their private systems in smaller communities, situated at some distance from program services traveling over existing "common carrier" routes.

The FCC attitude can be seen in the following statement in the notice on its proposed rule. The notice points out that the North Dakota Broadcasting Co.'s petition

. . . "serves to focus attention on a problem that has been under study by the commission since the lifting of the 'freeze' on new television station construction in 1952. The commission is satisfied that the rules and policies, in so far as they contemplate that the nationwide television program network should be provided by common carriers, are sound and serve the public interest.

"The commission is of the view that the existing common carrier network, including main routes and branch lines emanating therefrom, should continue its orderly growth in order to meet the requirements of the broadcasting industry for network transmission facilities.

"It has become increasingly evident, however, that a problem is presented by the application of the commission's rules and policies with respect to television stations located in relatively small communities which are at a distance from program service points on existing common carrier routes.

"Because of the distance of these communities from such program service points, the monthly common carrier mileage charges for the television

McConnaughey Named FCC Chairman

As TELEPHONY went to press, news was received that President Eisenhower on Sept. 25 named George C. McConnaughey of Columbus, O., as the chairman of the Federal Communications Commission.

McConnaughey had been chairman of the government's renegotiation board.

Mr. Eisenhower gave him a recess appointment as a member of the FCC, and then designated him as chairman.

McConnaughey was named to the unexpired term of George E. Sterling, who resigned from the FCC the week of Sept. 13 because of illness. The unexpired term expires on July 1, 1957.

The new FCC chairman is a Republican. He replaces Rosel H. Hyde as chairman. Hyde's term as head of the regulatory body expired last June. Hyde, however, remains as a member of the commission. The White House said that Mr. Eisenhower would continue his policy of rotating the FCC chairmanship.

transmission facilities which are required to connect the stations to the established networks may not be commensurate with the economic prospects of these stations for profitable operation.

"This situation may deter and hinder the development of a nationwide television service.

"Furthermore, the construction of facilities for interconnection by the common carriers in such instances represents a substantial investment, and in some instances the greater portion of such investment may be unrecoverable upon the financial failure of such television stations."

Under the present FCC rules TV intercity relay station service can only be on a temporary basis until adequate "common carrier" facilities are available. The commission's notice set a deadline of Nov. 8 for comments by persons interested in the proposed rules. There would then be 16 days for replies, comments, and briefs.

Suburban Areas Growing

A recent study of population trends by Lionel D. Edie & Co. of New York, economic analysts, contains much food for thought in the Independent telephone industry. This study shows that suburban type public utilities have a greater potential for increasing their future earnings and dividends than utility companies serving the older established large cities—all other things being equal. Independent telephone companies are very largely in this category. With a few notable exceptions most of the very large cities in the United States have been or are being served by Bell System companies.

With the trend of population expansion away from the congested cities, future growth is pointing to the suburban or satellite communities—many of which are served by Independent telephone companies. The Lionel D. Edie company study says that the suburban growth potential is the result of two factors:

"First, the current low (dividend) payout which allows room for expansion; and second, continued financing needs as a result of capital expenditure requirements."

The study was based on privately owned electric utilities representing 38 per cent of the kilowatt-hour sales of the electric utility industry. Companies chosen were representative of the industry at large and also those serving suburban areas, cities, and the two combined. There is no reason to believe that, aside from financial organization, the service performance of telephone companies in cities and suburbs would not be parallel with the experience of the electric utilities.

Edie's report on the study said: "In general those companies primarily serving in the suburban areas have paid out a smaller share of earnings in the form of dividends. To a great extent the high level of capital expenditures has been the reason. The continued trend to the suburbs (i.e., population) indicates a continued high level of capital expenditures."

Edie's report added: "As opposed to this (suburban performance) companies primarily serving city areas have paid out a higher share of earnings in the form of dividends. In general capital expenditure needs of these companies have not been as great . . . and are expected to be lower."

The report shows that four representative suburban companies paid out an average of 66 per cent of earnings as dividends and had an average annual population rise of 8 per cent. Four representative companies serving cities, however, paid out an average of 79 per cent of earnings as dividends and had a population increase of 0.7 per cent.

Capital expenditures for suburban companies during 1955, according to the study, will be 12 per cent greater than for 1954 and population will increase 9 per cent. For the city companies, capital expenditures during 1955 were estimated to be 4 per cent less than during 1954 and population is expected to be up 1 per cent. This 9 to 1 comparison of expected city and suburb population increases should give much food for thought.

The report points out that capital expenditure by suburban companies "indicates a continuing need for funds." Part of this financing has been done through retained earnings which include accelerated amortization, and part by external means. This creates a pressure on the suburban type companies to "be attractive to investors." One of the accepted techniques in meeting financing needs . . . has been "to raise dividends."

Massachusetts Rate Case

The Massachusetts commission has been directed to re-examine the New England Telephone & Telegraph Co.'s petition for a rate increase. The ruling comes from the Massachusetts Supreme Judicial Court, which has had under consideration an appeal from a December, 1952, order of the commission allowing an increase of only 7½ million dollars out of the company's request for ten million dollars. The case has been watched closely in regulatory circles because this court had, in a 1949 decision involving the Lowell Gas Co. —78 PUR NS 506—indicated some doubt about the commission's rigid adherence to a traditional prudent investment rate base.

On Sept. 21, however, a court opinion by Justice Raymond S. Wilkins simply ordered the commission to reconsider its decision in the light of the company's claim of confiscation. Noting that the commission had itself ruled that the company was entitled to a return of 6.313 per cent on investment, Justice Wilkins said: "We think that the findings reveal that the company's fears that it will not earn the allowed rate of return are well-founded."

It may be significant that the court ordered that the collecting of additional rate increases, made last November, should continue in effect until the commission has re-examined the facts. Under these provisional rate increases, residence subscribers are paying about 25 cents a month more and commercial subscribers about $1.00 more under a one-million-dollar bond posted by the company to cover refunds. The company's management noted that since the commission's decision of nearly a year ago its intrastate investment in Massachusetts operations has increased 25 million dollars above the rate base used by the Massachusetts commission. The inference was

(Please turn to page 46)

1954 CONVENTIONS

United States Independent Telephone Association (annual convention), Conrad Hilton Hotel, Chicago, Oct. 11, 12 and 13.

North Carolina Independent Telephone Association, Carolina Hotel, Pinehurst, Oct. 18 and 19.

South Carolina Independent Telephone Association, Lafayette Manor, Myrtle Beach, Oct. 25 and 26.

Virginia-West Virginia Independent Telephone Associations (joint convention), Roanoke Hotel, Roanoke, Va., Oct. 28 and 29.

Oklahoma Telephone Association, Huckins Hotel, Oklahoma City, Nov. 4 and 5.

Alabama-Mississippi Telephone Association, Thomas Jefferson Hotel, Birmingham, Ala., Nov. 8 and 9.

South Dakota Telephone Association, Cataract Hotel, Sioux Falls, Nov. 11 and 12.

Georgia Telephone Association, Bon Air Hotel, Augusta, Nov. 12 and 13.

Florida Telephone Association, Soreno Hotel, St. Petersburg, Nov. 15 and 16.

Factors in the Selection of Telephone Carrier Systems

by HAROLD R. HUNTLEY

PART 2

PART 1 of this paper which was published in the Sept. 25 issue, discussed, first, the growing importance of carrier and pointed out that it is no longer exclusively a "long-haul" system. It went on to discuss the advantages of carrier from the transmission standpoint (because of high velocity of propagation and four-wire operation) and the factors which affect the economies of its use. It concluded with a very brief description of the carrier systems now in common use in the Bell System.

Part 2, which follows, discusses the kinds of factors which enter into determining what kind of a carrier system is best under a particular set of circumstances.

Chart 5 lists the systems in four different orders, as follows:

(1) In approximate order of maximum number of circuits which can be included on a route.

(2) In approximate order of line and repeater costs per circuit.

(3) In approximate order of terminal costs per circuit.

(4) In approximate order of flexibility in application and use.

These four factors are the ones of greatest importance in deciding which system to use in a particular case. I will discuss them.

Ultimate Route Capacity. A factor of obvious importance in the selection of the type of carrier to be applied in any particular case is the likely ultimate size of the route. If the route is ultimately going to be very heavy, one tends to select something like one of the coaxial systems or ON, or a combination of them.

However, even for routes which will ultimately be very heavy, it is not a foregone conclusion that L1 or L3 is the answer. With these systems, the initial investment in cables (or radio relay), repeaters, and terminal gear is large even though the initial number of circuits may be small. Thus, for routes which start with a relatively small number of circuits, the initial cost per circuit is high.

With N1 or ON, on the other hand, fairly large numbers of circuits can be accommodated in a moderate sized cable with much lower "getting started" costs. For example, a 57-quad cable will carry over 600 N1 circuits or over 1,100 ON circuits.

Combinations of coaxial and N1 or ON systems are being used to considerable extent in the Bell System. In this case the cable has a ring of coaxials around which are one or two layers of quads or pairs. A typical example of such a cable is shown in *Fig. 1.*

SUMMARY OF CHARACTERISTICS AFFECTING FIELD OF USE OF CARRIER SYSTEMS

Systems Listed in Approximate Order of

	Ultimate Route Capacity	Line and Repeater Costs Per Circuit	Terminal Costs Per Circuit	Flexibility
Least	O1	L3	N1	L3
↑	N1	L1	O1	L1
↑	K	ON	ON	K
To	ON	N1	K	N1
↓	L1	K	L1	ON
Most	L3	O1 (1)	L3	O1

Note: (1) The line costs for O1 vary over a very wide range, depending on circumstances, and on some routes may be less than for ON or N1 and on others more than for K.

Chart V

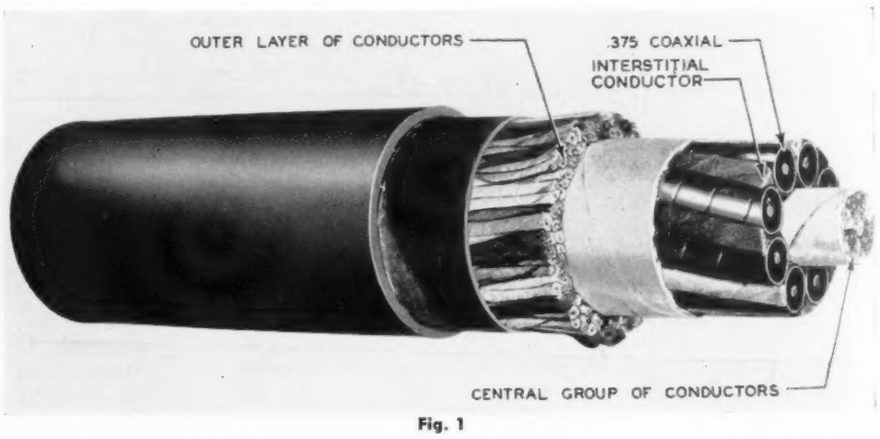


Fig. 1

The quads or pairs are used for N1 or ON. Thus, in the same cable there are heavy-duty long-haul systems and a number of short-haul systems; each being used in its own field. The coaxial systems, of course, connect the main points and the N1 or ON systems serve way points in between.

For a situation where it is necessary to provide very broad band channels (such as for TV or equivalent), one of the coaxial systems or a radio relay system would be required since none of the other systems is capable of providing these very broad band channels. This has meant in some areas paralleling existing K carrier cable routes by radio, and where this has been done, it has often been advantageous to break up the K's to care for shorter circuits along the route, concentrating the long haul requirements on the radio system.

Costs of Lines and Terminals. Looking at the second and third columns of *Chart 5*, it will be observed that the systems are listed approximately in reverse order in these two columns; that is, in general, the lower the line costs per channel the higher are the terminal costs. The very desirable objective of getting lots of circuits on a single base facility with cheap terminals still eludes us.

As discussed earlier, the only way to produce less expensive circuits with more expensive terminal gear is to put the terminal gear installations farther apart. This is, in fact, what is done in the Bell System. One sees very few short circuits on coaxial (which has relatively high terminal costs per circuit); they are on O1 and N1 systems (which have lower terminal costs per circuit).

Now, while in a network like that of the Bell System there is an extensive system of heavy duty routes using L1 or L3 carrier, there is a much more extensive system of lighter routes—both cable and open wire—which use the systems at the ends of the second and third columns in the table on *Chart 5* opposite to the L1 and L3. I can illustrate this by showing *Chart 6* which shows all of the Bell System toll routes for Minnesota and Wisconsin. The thing which impresses one in a map like this is that in spite of the vast distances and the large cities which we have in this country, the preponderance of our routes are relatively short and relatively light. In total, the number of circuits on light routes is several times the number on the heavy routes.

Actually in the states of Minnesota and Wisconsin there are many other toll routes operated by non-Bell System companies. I have not shown them because I was not able to get complete data on all of them and I thought the better thing to do under those circumstances was to leave them out but if I had been able to include them, the map would have shown the area to be even more densely covered by a network of lines.

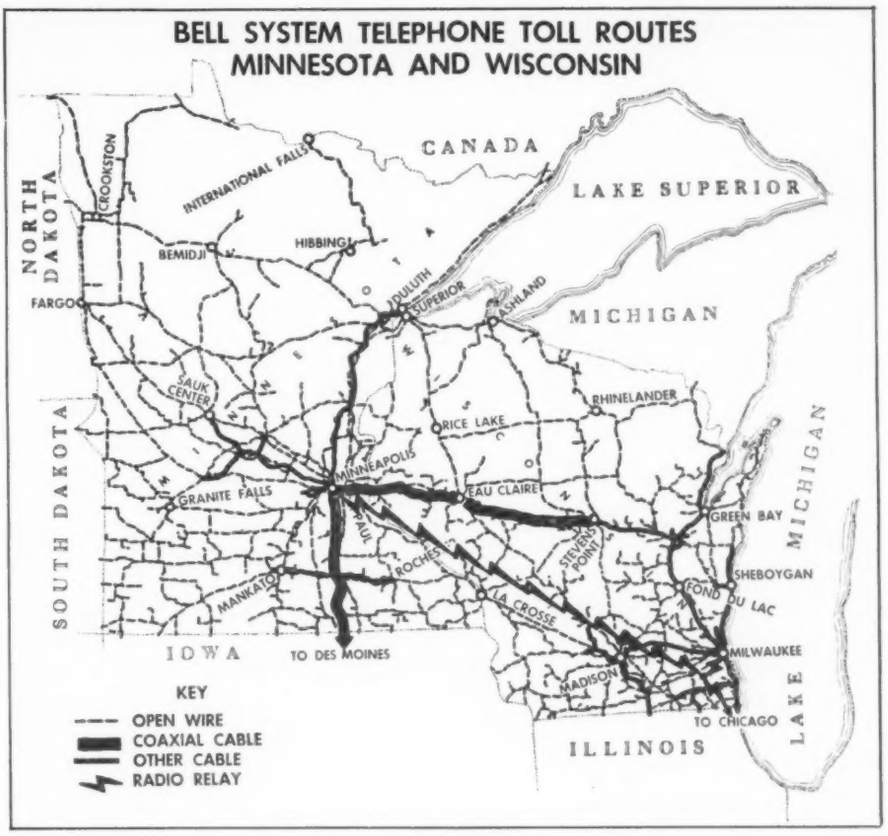


Chart VI

Flexibility. I have elected to discuss the matter of flexibility as a factor in the selection of carrier systems at more length than any of the others because it is less self-evident and I suspect it may not be given as much weight as it should have in some cases.

What I mean by flexibility are things like the following:

(1) Ease of application to existing plant—cable, open wire or radio.
(2) Ease of breaking out and terminating small numbers of circuits.
(3) Ease of access to circuits.
(4) Ease of establishing or discontinuing terminal points.
(5) Ease of maintenance.

Perhaps, I can illustrate what I mean by flexibility by pointing out that the most flexible circuit in the plant is the open wire operated at voice frequency. Almost anybody can string it if he has a pole line to string it on. It is easy to maintain; one can establish a circuit over it with literally nothing but a pair of telephones; anybody who can climb a pole can get in communication from any point to the end, etc. The only things wrong with it are its high cost, limited circuit capacity of a route, its susceptiveness to external man-made or natural influences and the fact that it may fall down during severe storms.

Voice frequency cable probably comes next in order of flexibility. It is a little harder to establish a circuit because the conductors are inside a sheath and because the transmission losses are so high that the circuits must be cluttered up with repeaters which introduce engineering, application and maintenance problems. Also, route capacity is limited and costs per circuit are relatively high and the velocity of propagation is too low for long circuits, but it is reasonably flexible, and this must be counted as a virtue.

When we go to carrier, the situation is different. We can no longer establish or cut in on a circuit with a simple telephone. We must have terminal equipment to translate the carrier frequencies to voice frequencies and to separate the various carrier channels and direct each to its proper destination. All carrier systems have this characteristic but the amount and character of the gear which is needed to gain access to a particular circuit is greatly different in the different systems, as discussed below.

Generally speaking, there are two opposite philosophies applied to the

(Please turn to page 30)

Then—One of the principal streets of High Point, the "industrial city" of North Carolina, as it appeared about 1919, when Strowger Automatic was installed.

Now—Same street today, gives indication of progress made by prosperous Southern furniture manufacturing center. The Strowger Automatic exchange still serves faithfuly.

From every city and town where Strowger Automatic is used comes the same convincing story: time proves that nothing can equal it for dependability! Here's one of our hundreds of satisfied customers—High Point, North Carolina.

"Half a Lifetime—and ALL'S WELL"

STROWGER AUTOMATIC

"Half a lifetime—and" *of course,* "all's well!" That was just what the North State Telephone Company *expected* back in 1919 when they cut High Point, North Carolina, over to Strowger Automatic. For even then, Strowger Automatic was a byword for dependability.

High Point, and hundreds of successful exchanges like it, are your guarantee that Strowger Automatic is your safest investment.

When you take a close look at Strowger Automatic equipment, you can *see* one of the reasons why it's so dependable. It's built solid! But there are other reasons you *can't* see, like quality materials and craftsmanship in manufacturing. And the biggest reason is experience—Automatic's more than 60 years of research, development, engineering, and manufacturing of successful exchange equipment. Only automatic can offer the assurance of such a record. That's why the biggest and most successful companies buy Strowger Automatic.

If you're planning to "go automatic," you'll find a consultation with our engineers most helpful. Write us today.

AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems

Makers of Telephone, Signaling and Communication Apparatus • Electrical Engineers, Designers and Consultants

Distributors in U. S. and Possessions: AUTOMATIC ELECTRIC SALES CORPORATION
Export Distributors: International Automatic Electric Corporation
1033 West Van Buren Street, Chicago 7, U. S. A.

design of carrier systems and each is appropriate to the use to which the system is to be put.

The philosophy which applies to the long heavy-duty kind of system is to use equipment which is common to many channels and to several systems and to get as many circuits on a common base facility as the state of the art will permit. This is a perfectly sound philosophy under the conditions for which the systems are designed because even though the total cost of this common plant is high, the contribution to the cost *per circuit* is moderate or low because it caters to so many circuits. The L1 and L3 systems are based on this philosophy.

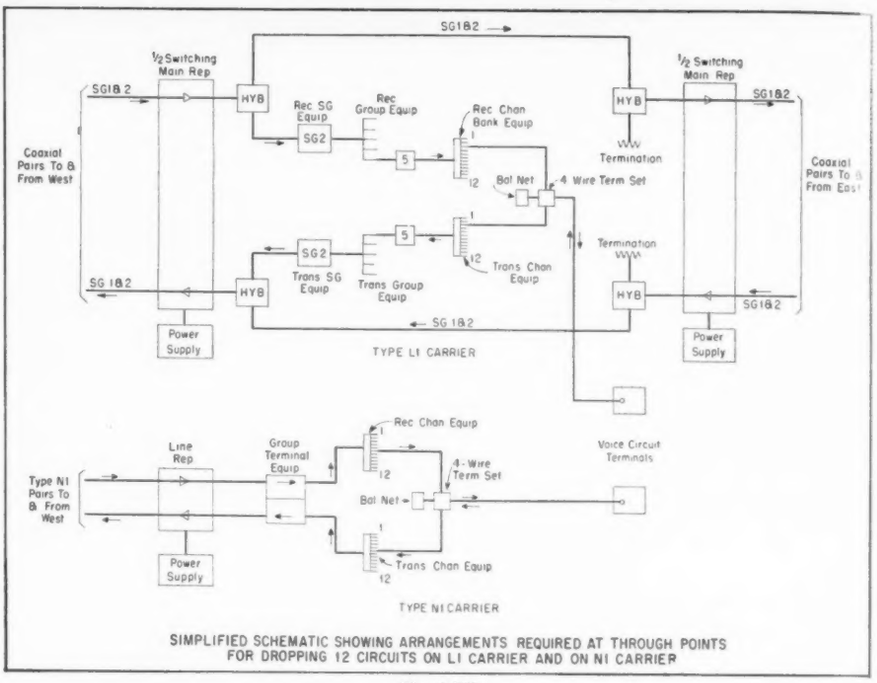
The other philosophy says that each circuit should be as nearly self-contained and as independent of other circuits in the same system as practicable; that there should be little, if any, equipment common to more than one system, and that only as many channels are put on a base facility as are compatible with low equipment cost. This also is sound under conditions for which the systems are designed as long as the gadgets don't cost too much, so that duplication is not unduly expensive. The N1, O1 and ON systems are based on this philosophy.

Now, it is easy to see that the second philosophy is the one which leads to the greater flexibility. The philosophy itself tends toward greater flexibility and this flexibility is further enhanced by the widespread use in these systems of plug-in arrangements* in which the only permanently installed parts are relatively inexpensive frames into which the more expensive active parts can be plugged.

We might illustrate what this means by considering the problem of establishing a dozen circuits between two points, in one case by means of an N1 system and in the other by means of an L1 system.

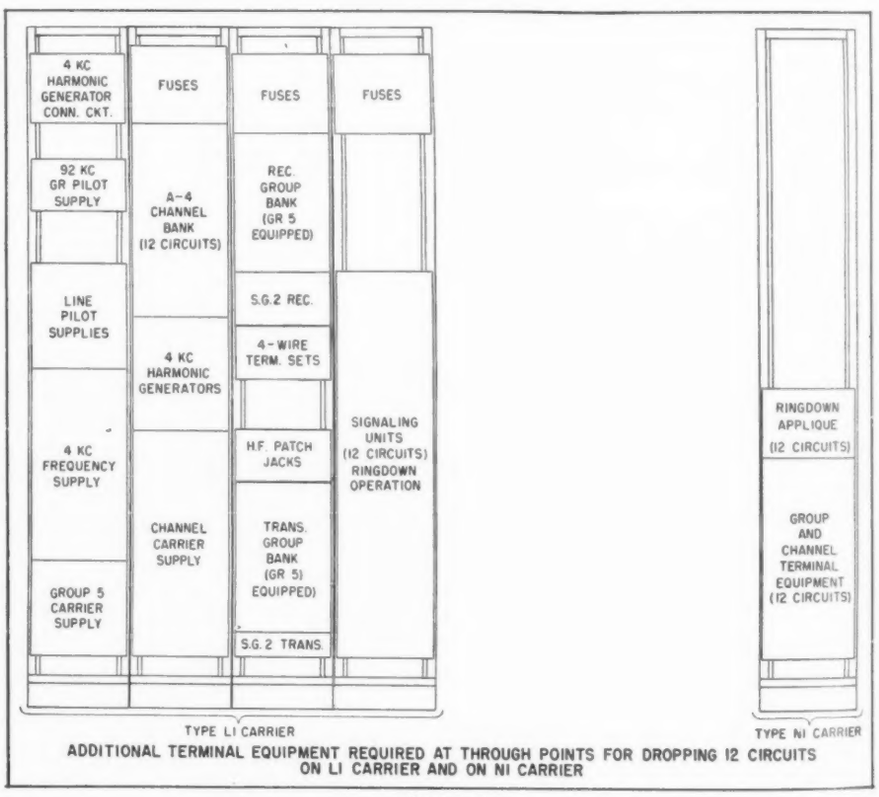
First consider the terminal equipment. *Chart 7* shows schematically the circuitry and *Chart 8* compares the physical gear that would be involved at each terminal using these two methods. The difference in the amount and complexity of equipment required is quite obvious. Actually the difference is even greater because the plug-in features* of the N1 system greatly simplifies the problem of establishing or moving the equipment.

The difference in line facilities is at least as great as the difference in terminal gear. With N1 or ON all that



SIMPLIFIED SCHEMATIC SHOWING ARRANGEMENTS REQUIRED AT THROUGH POINTS FOR DROPPING 12 CIRCUITS ON L1 CARRIER AND ON N1 CARRIER

Chart VII



ADDITIONAL TERMINAL EQUIPMENT REQUIRED AT THROUGH POINTS FOR DROPPING 12 CIRCUITS ON L1 CARRIER AND ON N1 CARRIER

Chart VIII

is needed between the two points is two non-loaded pairs in either aerial or underground cable; with L1 or L3 an underground coaxial cable or heavy-duty radio relay system is needed. With N1 or ON, repeaters are mounted in simple boxes hung on poles; with L1 or L3 they must be mounted in thermally insulated huts; power supply arrangements are much simpler with N1 or ON than with L1, etc.

And we must not forget ease of maintenance in considering flexibility. The plug-in philosophy says two things of importance from this standpoint:

(1) Don't keep the circuit (or system) out of service while you shoot trouble in the equipment; plug in a new unit, restore the service and repair the old one at leisure.

(2) Let the equipment repair work be done by a few experts in shops where they have all of the test gear and other facilities they need rather than trying to train everybody in all

* The plug-in technique while employed to its greatest extent in the N1, O1 and ON systems, is not unique with them. Actually it is also used in the L1 and L3 line repeaters.

of the details of all kinds of carrier equipment.

And, also, we must not forget the essential portability of plug-in gear. A 12-channel N1 installation looks pretty permanent. But the whole thing is nothing but 14 units, no one of which weighs over 10 pounds or is bigger than a couple or three cigar boxes. When they are pulled out, nothing remains but a very simple frame. Once pulled out they can be easily carried and plugged into a similar frame anywhere else and we have one end of a dozen circuits ready to be lined up and go.

Now what does all this flexibility buy us aside from saving money? I think most of the things are obvious but some of them may be worthwhile mentioning specifically.

(1) In the first place, we can and do have carrier and hence have high grade circuits to all kinds of places. We can reach little places as well as big places by means of carrier. We even have carrier in army camps; for example, at Camp Swanson many of the pay stations are connected directly to the switchboards at remote points (such as Syracuse) over N1 carrier channels with the carrier terminals at the camp itself.

(2) Such a diverse network is very difficult to disrupt and even if we should lose some important point from natural or man-made causes, we can be in business on any route with a couple of dozen circuits with gear which can be carried to the nearest power supply point—never more than 25 miles away—in a station wagon. (If we also want to carry along a couple of kilowatts of power, we can do the same thing at any repeater point; maximum distance 8 miles).

I do not, in what I am saying, mean to disparage the heavy-duty type of system. We need it for the heavy-duty routes and we have enough such routes so that if we lose one of them, the reactions are not too serious. But the real thing which makes the overall network almost proof against serious disturbances from almost any cause is the fact that in addition we have an extremely diverse and extensive network of short-haul carrier.

Combination of Factors. In the final selection of a carrier system to do a specific job, all four of these factors—maximum size of route, line and repeater costs per circuit, terminal costs per circuit and flexibility—must be considered. There are no simple rules which will automatically produce the right answer. An additional consideration is the service advantage accruing from diversifying basic types of facilities—cable and radio—along a route, since generally these are not subject to the same hazards nor to interruptions at the same time. Each situation must be analyzed and the system which is most appropriate to the conditions must be selected on the basis of circumstances.

Conclusion

About four years ago I helped my boss write a semi-popular article for the *Bell Telephone Magazine* called "Carrier Is King."

And so it is. But in the intervening few years, carrier also has become the handmaiden and the manservant. The evolution in thinking in this short period has been remarkable. No longer does carrier have to carry the burden of proof; it is always the first choice, and voice frequency circuits are used only regretfully in those cases where carrier has still not been developed far enough to be able to compete on a cost basis.

What has given carrier this new status? The reasons can be summed up in two phrases; lower cost terminals and greater flexibility. These are the things which have changed carrier into a fine strong workhorse and which are being carried even further in our current development program.

GAS WELDED SPLICES

Continued from page 19

cables and built-up area as shown in *Fig. 17* by following the same procedure described in steps (2) and (3) for a straight splice. The spacer in this case will assume an oval shape. The flexible plastic splicing sleeve will

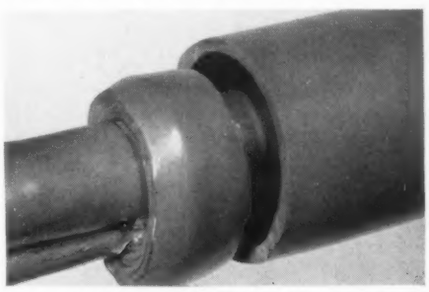


Fig. 17

Fig. 18

conform to the shape of the spacer with no difficulty. Place a second spacer strip on the main cable at the other end of the splice in the same manner as outlined in steps (2) and (3) for a straight splice.

Fig. 19

(5) Slip the sleeve into position approximately ¼ inch from the end of the spacer and weld filler rod to spacer and sleeve as shown in *Fig. 18* in the same manner as described under step (6) for a straight splice.

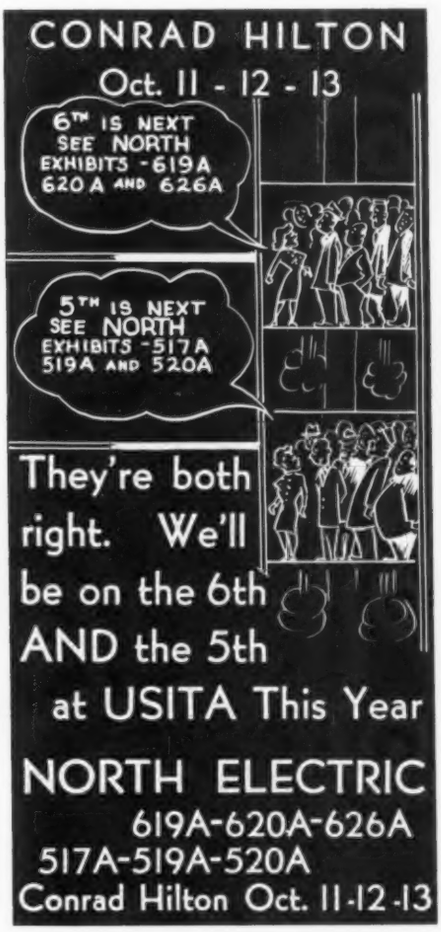
(6) Weld filler rod to jacket and spacer as shown in *Fig. 19* and complete welding operation on the entire end section as described in step (7) for a straight splice.

(7) Pressure test completed splice as outlined in step (9) and support splice as described in step (10) for a straight splice.

A hot gas welded split splice can be made on Ankoseal telephone cable as follows:

(1) The procedure employed in a split sleeve splice is the same as a straight splice or bridge splice up to the step where the sleeve is placed in position.

(2) The sleeve required will be de-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6TH IS NEXT SEE NORTH EXHIBITS -619A 620A AND 626A
5TH IS NEXT SEE NORTH EXHIBITS -517A 519A AND 520A
They're both right. We'll be on the 6th AND the 5th at USITA This Year
NORTH ELECTRIC
619A-620A-626A
517A-519A-520A
Conrad Hilton Oct. 11-12-13

termined by size of splice to be covered. The sleeve should be slit and placed into position onto the spacers. The sleeve should overlap approximately ¼ inch. Direct the hot gas between the lapped surfaces of the sleeve as shown in *Fig. 20* and press together after the opposite faces have been softened. Continue this operation over the entire length of sleeve.

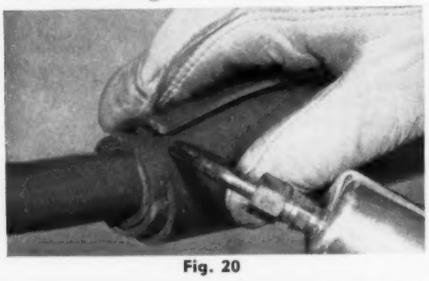

Fig. 20

Fig. 21

(3) Weld filler rod along the lapped edge of the sleeve as shown in *Fig. 21.* The rod must be securely welded to the edge of sleeve and adjacent lapped surface. This is done by heating both sections and rod at the same time and placing the filler rod into position under pressure after all units have been softened with the hot gas. Continue this operation over the entire length of sleeve to seal the seam. Heat the immediate area of the sleeve and filler rod and press with thumb to reinforce seam over the entire sleeve length.

(4) Weld the filler rod to the sleeve and spacer as shown in *Fig. 22.* All other operations are the same as a straight splice or a bridge splice and

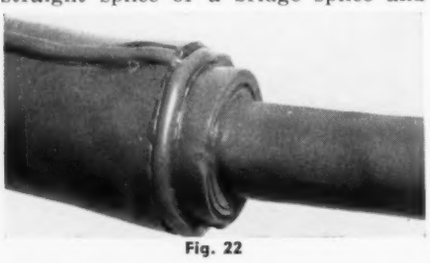

Fig. 22

the balance of the split sleeve type splice can be completed in accordance with the applicable steps previously described.

The plastic splicing sleeves can be readily removed from the splice when necessary. The sleeve is cut off the spacer with a knife at the point where the sleeve meets the filler rod and slit longitudinally along the sleeve. The same sleeve can be welded over the splice by following the steps outlined below:

(1) Remove one-quarter to one-half turn of the spacer strip. This will permit the sleeve to be overlapped when placed in position in the same manner as described for a split sleeve splice.

(2) Weld the overlapped section of the sleeve.

(3) Bevel the edges with a knife to form a "V" on the ends of the sleeve and the filler rods on the spacers.

(4) Weld filler rod to beveled section and dress down.

(5) Weld filler rod to seam as described previously for a split sleeve splice.

(6) Pressure test and support splice.

The major difficulties in splicing, regardless of the method employed, usually emanate from the use of materials not specifically recommended for the job, failure to take the necessary care in making the splice, failure to follow the recommended procedures, or failure to use the standards established to assure that the splice will perform without service interruptions over an extended period of time.

It is only through the use of reliable splicing methods that telephone companies can obtain the full advantages of greater lightning protection and moisture resistance provided by the polyethylene insulation used in plastic telephone cable.

V V

Pa. Association Prepares State Telephone Brochure

The Pennsylvania Independent Telephone Association recently announced it has prepared a brochure covering the Independent industry in the state. Titled "Independent Telephone Companies . . . One of Pennsylvania's Biggest Industries," it was planned that the folder would be given to visitors to the Pennsylvania association's exhibit at the state industrial and construction exposition (Sept. 20 to 25), which was expected to attract close to 300,000 people.

The brochure tells of the extent of the industry in Pennsylvania—115 companies serving 580,000 telephones; contains a map clearly showing what a large portion (62 per cent) of the state, geographically, is served by Independent companies, and recounts some of the history of the Independent industry.

V V

Approve Merger in Oregon

The board of directors of the Bellfountain (Ore.) Telephone Co. recently approved a merger with the Pioneer Telephone Co., Philomath.

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Reduce loss in revenue due to pole failure. Buy Diamond C from S-C!

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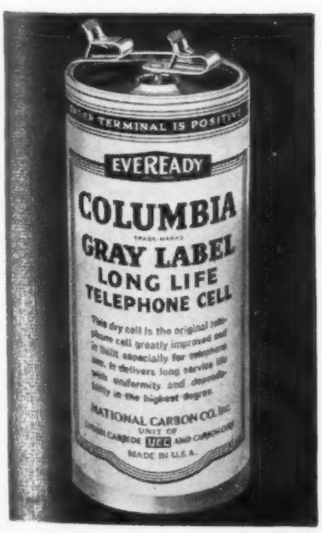

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COURTS and COMMISSIONS

Indiana Company's Subscribers Ask Increase in Rates

The Indiana Public Service Commission reportedly confessed on Sept. 17 to having seen almost everything when all but 40 subscribers petitioned to have the rates of the Burrows Co-operative Telephone Co. increased.

Customers of the exchange asked raises which, in some cases, amounted to 100 per cent.

They said they believed the company did a good job and deserved more money. The 196 added they filed the petition because the company did not have money to pay an attorney to do it.

V V

Accept Tariff Amendment by New York Independent

The New York Public Service Commission has accepted a tariff amendment filed by Ontario Telephone Co. designed to increase rates effective Oct. 1. The company serves about 2,000 stations through exchanges at Clifton Springs and Phelps. It is now engaged in modernizing its plant and plans to convert to automatic operation next year.

In filing its new tariff, the company reported additional revenue was needed to offset the effects of recent wage increases and introduction of an employe pension plan and declared that its operations for the next 12 months would otherwise be at a substantial loss.

A comparison of present and proposed new monthly rates is as follows: Residence service, one-party, increased from $3.00 to $4.00; four-party and rural, from $2.50 to $3.00; and 10-party rural (magneto), from $2.25 to $3.00. Business service, one-party, increased from $4.00 to $5.50; four-party, from $3.25 to $4.75; 10-party rural (magneto), from $2.75 to $4.00; and rural, from $3.00 to $4.00.

V V

Magneto, Common Battery Rates Approved for Alabama Company

Two schedules of increased rates were recently approved by the Alabama Public Service Commission for the Madison Telephone Co., Inc.

One schedule will enable the company to operate at a profit instead of a deficit with its present magneto system. The second will be placed in effect when the company converts its system to common battery operation.

Under the old schedule, one-party business service cost $3.50. Under the newly authorized magneto rate, the charge will be $4.00 and $5.00 for the proposed common battery system.

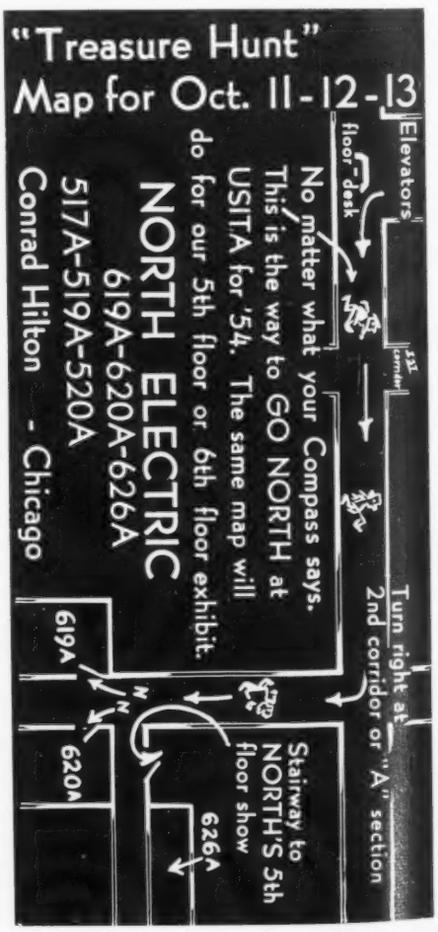
One-party residence service, formerly $2.50, will be $3.00 and then $3.50 under the approved changes. Two-party residence will go from the former $2.00 to $2.75 to $3.00. Rural residence will go from $2.00 to $3.00 only on the first change, and will remain there after the common battery service rate change is made.

V V

South Carolina Independent To Effect Toll-Free Service

Sam A. George, general manager of the Citizens Telephone Co., Lexington, S. C., on Sept. 11 announced that Lexington subscribers will soon be able to dial numbers in Columbia, S. C., served by Southern Bell Telephone & Telegraph Co., without paying a toll charge.

The South Carolina Public Service Commission authorized Citizens on May 24 to establish the extended scope



How to get P-A-B-X Business

Personal contact is the answer: Here, D. L. Hipskind, Division Commercial Manager, General Telephone Company of the Northwest, Wenatchee, Wash., sets out on a call.

General Telephone Company of the Northwest, Spokane, Washington.

"Follow-ups on P-A-B-X inquiries are accomplished preferably by personal contact." The company's initial effort is to determine what each prospect needs. The appropriate P-A-B-X is then selected, and a company representative gives the prospect full information on it.

General Telephone Company of the Northwest operates 67 offices, and considers P-A-B-X a "better than average" revenue producer. Its Wenatchee exchange alone serves 33 P-A-B-X's and 1,284 business subscribers.

Start selling profitable P-A-B-X service in *your* area today. You'll find it's easy if you use our new sales kit. Send for this helpful kit today —and ask for quick delivery schedules on stock P-A-B-X switchboards.

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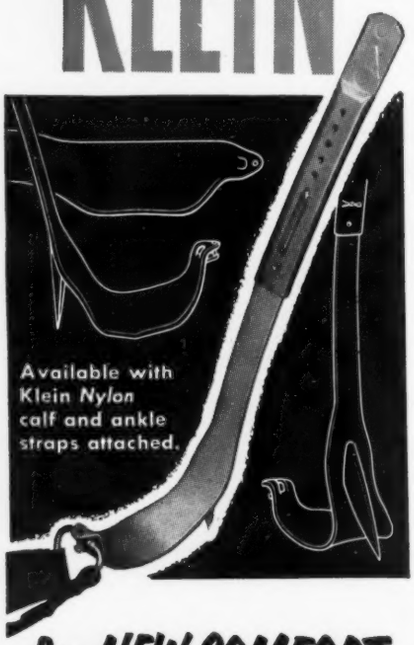

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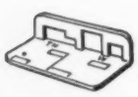
Meet the big new favorite—Klein Climbers fully shaped to the contour of calf and ankle. That means a firmer, closer fit . . . a greater measure of safety. There's a new shape to the extra-wide stirrups also, for more comfortable arch support. Klein Climbers are made of forged steel, individually tempered and tested—aluminized for weather protection. Matched in pairs—adjustable length patterns 15 to 18 inches, specify 1945-ADJ—fixed length patterns 15 to 18½ inches, stock sizes specify 1945.



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Keep this precision gauge handy for a safety check on proper spur shape. Plated steel—packed in durable plastic case.

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Protect the all-important spur of your climbers with this new Klein gaff guard. First quality leather with spring clip.

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service between its Lexington exchange and the Columbia exchange.

The order granting the authority also authorized the company to increase the monthly minimum rates to approximately the same as those rates paid by Southern Bell subscribers in Columbia.

Until Citizens begins the proposed service, a Lexington resident will continue to pay a toll of 20 cents for a station-to-station call and 40 cents for a person-to-person call.

The Citizens company recently installed its 1,302nd telephone, an increase of more than 300 per cent from the 322 telephones owned by the company in 1944.

Mr. George, in noting that the company had quadrupled its size in the past 10 years, said $300,000 was spent in several expansion and improvement projects and that the company planned to spend an additional $50,000 in the next 12 months. He said loans were obtained from the Rural Electrification Administration.

V V

Asks Approval of Sale To North Carolina Co-op

J. Lee Keiger Jr., owner and operator of the East Bend Telephone Co. in Yadkin County, asked the North Carolina Utilities Commission on Sept. 21 for permission to sell the company to the Yadkin Valley Telephone Membership Corp., Yadkinville, a newly formed cooperative.

Mr. Keiger said he felt that the cooperative could give his customers and the area better service than he is able to provide.

The East Bend company began operating in 1948, providing service for a section now served by larger companies, and now has about 75 customers.

V V

Missouri Company Applies for O.K. to Buy Three Companies

The Chariton Valley Telephone Corp. is seeking Missouri Public Service Commission permission to buy, improve and operate some northern Missouri exchanges.

The company, with headquarters in Macon, asked authority on Sept. 22 to buy the Bucklin Telephone Exchange and the Ethel Telephone Co. from owners who have agreed to sell.

The corporation also plans to buy the Bynumville Mutual Telephone Co. so it will have exchanges with operating areas encompassing parts of Macon, Linn, Chariton, Monroe, Sullivan, Randolph and Shelby counties.

Approve 6.19% Return for California Company

The California Public Utilities Commission recently announced a decision granting a rate increase to the Siskiyou Telephone Co., Etna, which serves approximately 720 subscribers.

The commission estimated the increase would yield the company a 6.19 per cent return.

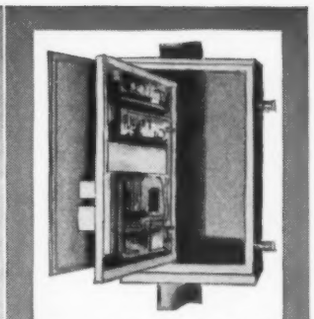
The commission, however, did not authorize the rate increase granted to apply to the company's Happy Camp, Hamburg or Horse Creek exchanges.

The commission decision also authorized the company to discontinue its Sawyers Bar exchange, although continuing to provide toll service to that area. No increase in toll rates was approved.

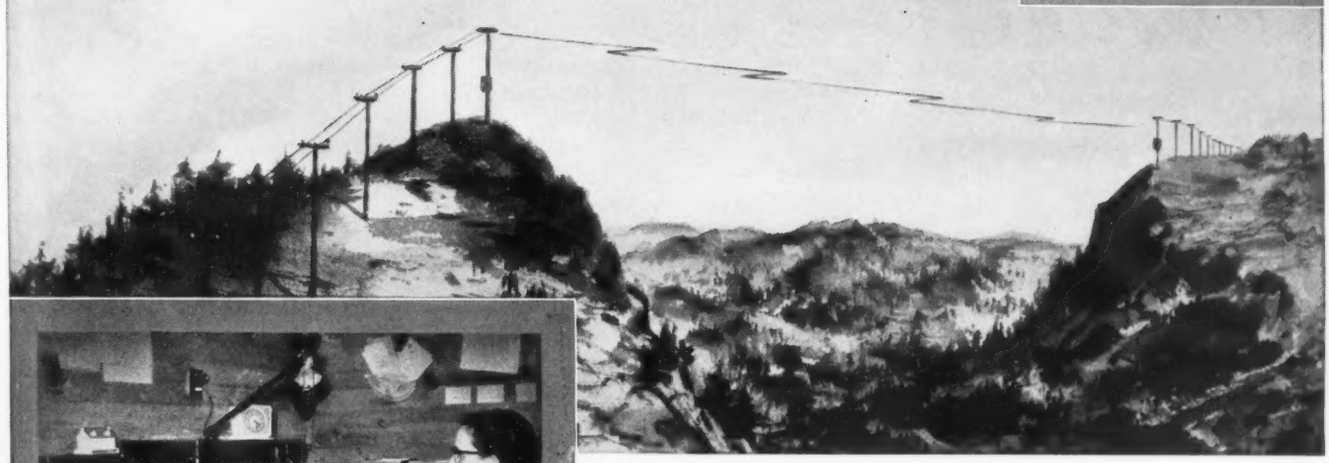
In its decision, the commission said "The evidence clearly shows the applicant is entitled to some increases in rates at this time." In regard to complaints of delays in reaching the operator, poor transmission and long lapses of service, the decision declared:

"Realistically . . . service improvements cannot be accomplished overnight nor without funds." The company "must be accorded rate relief and sufficient earnings to permit the obtaining of capital funds through bor-

G-E 2-way radio serves subscribers where wire lines could not reach



Thousands of General Electric 2-way mobile radio units are providing dependable service in the telephone industry today!



Expensive wire line construction eliminated!

HERE'S HOW the Crane Lake Telephone Company provides complete area facilities at low construction cost. They installed G-E 2-way radio equipment.

One base station and directive antennas were set up at Handberg's Indian Trading Post on Lac la Croix, Canada. Another G-E station unit was located 23 miles away at the Crane Lake exchange. Today, Jay Handberg's call travels across the Canada-U.S. border via the G-E radio route to Crane Lake. There, operator Carla Hansen connects him with his brother who is attending school in the U.S. This unique installation has meant communication for the very first time, regardless of weather or season. Since the original link was made, other subscribers in the area have joined this General Electric network.

Take a second look at your service expansion plans! G-E communications will solve many problems for you too! Get detailed information today. Write: *General Electric Company, Section X84104-2, Electronics Park, Syracuse, N. Y.*

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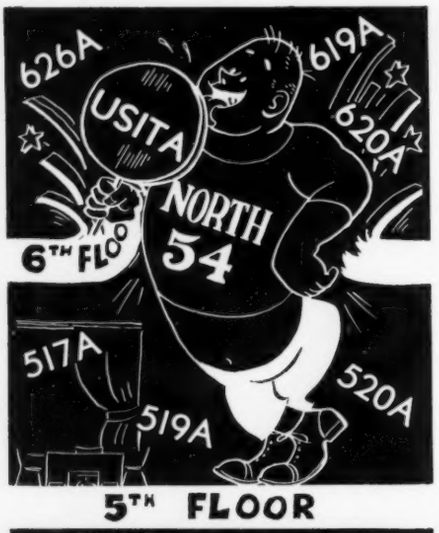

We've grown too big for the 5th Busted out with added space on 6th

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rowing at reasonable interest rates as well as to meet its expenses of operation and maintaining the system. System improvement will follow within a reasonable time."

In its application for the increases, the company said its operating expenses have greatly increased since the present rates were made effective in 1922, and that present revenue was not sufficient to cover operation expenses and produce any return on its capital investment.

The commission decision followed two hearings in October, 1953 and two last May.

V V

New England T&T Rate Rise To Continue, Says Court

The Supreme Judicial Court of Massachusetts in a 24-page decision has directed the state department of public utilities to reconsider its finding (filed on Dec. 10, 1952) on rates of the New England Telephone & Telegraph Co., which granted the company an advance of about seven million dollars a year instead of the 10 million dollars the company found necessary for an adequate return on its Massachusetts investment (TELEPHONY, Nov. 14, 1953, p. 29).

The commission had ruled that the company was entitled to a return of 6.313 per cent on its rate base. In his finding dated Sept. 20, Justice R. S. Wilkins held that the company's fears that it will not earn the allowed rate of return are well-founded.

The high court also ruled that the provisional rate increase established by the company last November shall remain in effect until the commission reexamines the facts. The company has posted a one million dollar bond to cover possible refunds in case the rates are not eventually confirmed.

Hugh W. MacDonald, general manager of New England T&T in Massachusetts, said, "We have not had the opportunity to study fully the opinion of the court. We note that the case has been recommitted to the department of public utilities (DPU) for further consideration, particularly with respect to increased investment used to furnish Massachusetts telephone service.

"Since the decision by the DPU, about one year ago, our costs in Massachusetts have continued to rise rapidly, as has our investment.

"The latest investment figure for intrastate Massachusetts operation of 286 million dollars is 25 million dollars higher than the rate base used by the DPU.

"A preliminary review will indicate that the rates requested by the company and denied by the DPU, which have been charged since November, 1953, were no more than reasonable and proper for that period.

"Whether or not these rates will be sufficient for the future, in view of still increasing costs and investment will require further consideration."

V V

New York Independent Seeks Approval of Rate Increases

Delaware Telephone Co., Walton, filed proposed rate increases with the New York Public Service Commission recently.

The increases were requested to become effective Oct. 1.

In the company's Downsville and Roscoe exchanges, the proposed raise for one-party business service is from $5.00 to $5.25.

Increases in Walton business rates would be from $5.25 to $6.25 for one-party; $4.75 to $5.50 for two-party; $4.25 to $5.50 for five-party; and $4.00 to $4.50 for rural.

Walton residence rates would change from $4.00 to $4.75 for one-party; $3.25 to $3.60 for two-party; $3.25 to $3.60 for five-party, and $3.00 to $3.50 for rural.

AVOID STATIC DISCHARGE WITH KEARNEY NON-STATIC GROUND WIRE CLIPS

You need never be bothered with complaints about static caused by gaps between the ground wire and clip. Even if this tight-gripping clip loosens in the wood, it will remain tight around the wire indefinitely.

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designed and manufactured to satisfy the urgent need and growing demand from telephone companies everywhere for a tough, dependable, inexpensive Digger . . . low in cost, operation and maintenance. Now for the first time, a STERLING Earth Boring Machine in the $3000-3500 price range.

The "Prospector" on display for its premiere showing in Chicago during the United States Independent Telephone Association Convention, October 10th to 13th. Inquire at Conrad Hilton Hotel — Room 613 A — for demonstration, or write for further information.

SPECIFICATIONS

The Sterling "Prospector", its low cost and unbeatable performance, has been designed especially for Telephone Companies, State Highway Districts, and Guard Rail Contractors.

1. Motor: Continental—4 cyl. — 164 cu. in. Dis. Engine.
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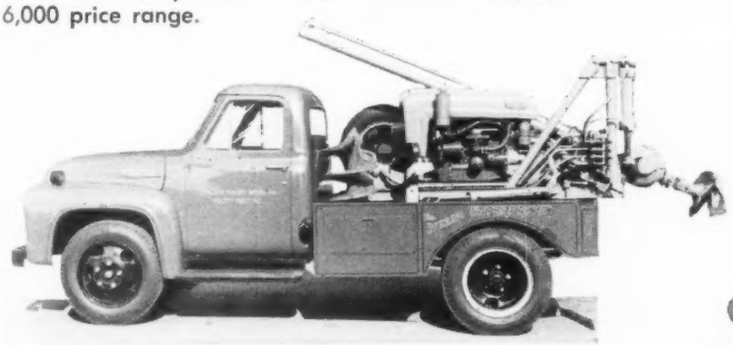

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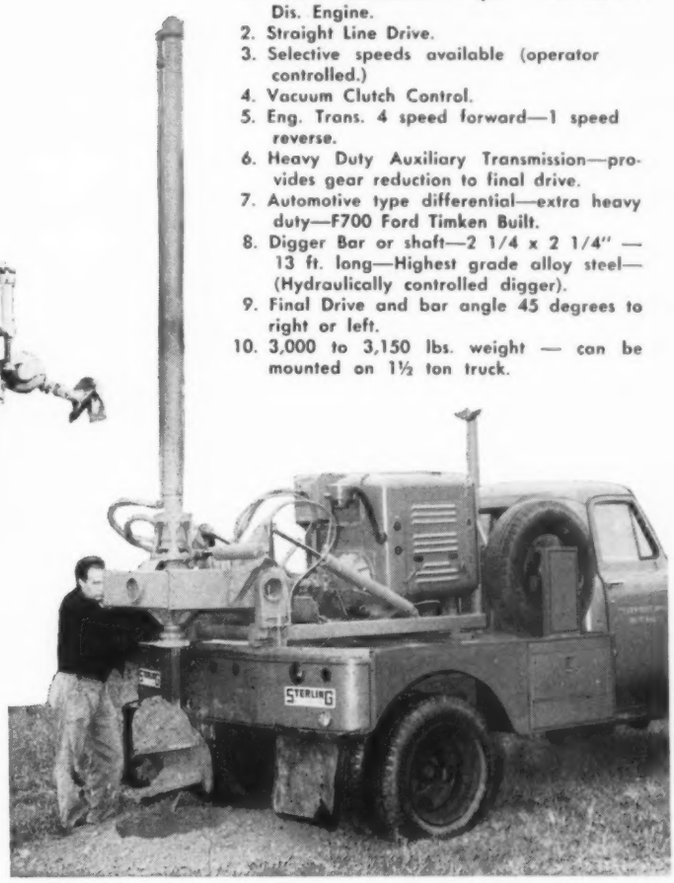
The "ENTERPRISER"

The "Enterpriser" was designed to meet the needs for a lighter weight machine that would handle up to a 20-inch auger and be mounted on lighter trucks. Hydraulically controlled, power is furnished by Ford industrial four cylinder. Transmission has three speeds forward and one reverse. Digs faster, operates easier, costs less to maintain, the "Enterpriser" sells in the $4,000-5,000 price range.



DEALERS ATTENTION:

Inquiries are solicited from responsible Dealers and Distributors to sell and service the complete line of Sterling Earth Boring Machines.

Wyoming Valley Equipment Co., Inc.

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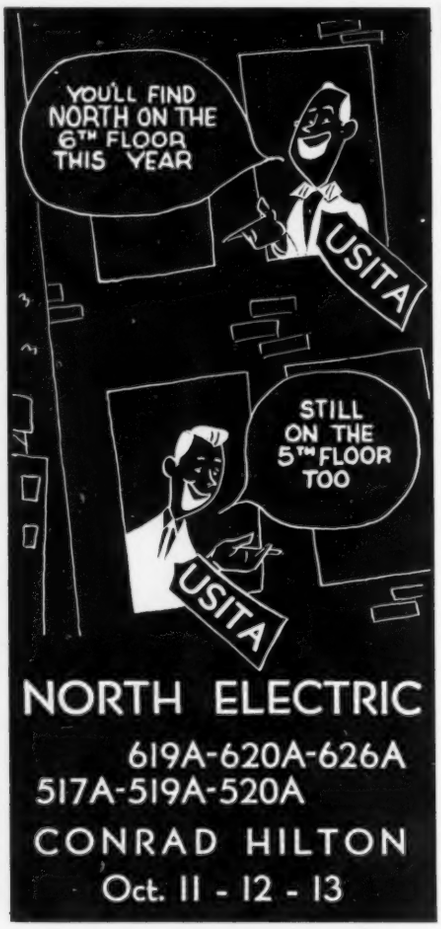


Oklahoma Commission Grants SW Bell Rate Adjustments

Oklahoma Corporation Commission on Sept. 16 granted Southwestern Bell Telephone Co. three rate adjustments, including a change from five-cent to 10-cent paystation rates, to compensate for wage increases recently given company employes.

H. B. Groh, Oklahoma general manager for the company, said it will be several months before the paystation increase goes into effect due to equipment changes necessary to convert present pay telephones.

Effective Oct. 1 will be an increase in the tariff for making all person-to-person calls and night and Sunday station-to-station calls within the state.

Corporation Commissioner Ray Jones said the adjustments were granted by the commission in a conference with telephone officials. Since basic telephone rates are not involved a public hearing was not required.

Company spokesmen said the additional revenue is expected to add up to a little more than half the cost of the wage increases given telephone workers in the state. Southwestern Bell estimated the employe pay boost will cost about $750,000 a year in Oklahoma.

Mr. Groh said the tariff adjustments were worked out in order "to avoid an increase in the basic monthly exchange rates charged for telephone service."

"Inasmuch as one-half of every dollar we collect from our subscribers goes for wages paid to our employes, the additional expense of a wage increase hits our Oklahoma operations with considerable impact," he said.

Mr. Groh noted that the 10-cent paystation rate already is in effect in 42 states and at approximately 90 per cent of all paystations in use throughout the country.

* * *

Subsequent to the above news, TELEPHONY received a report that the Oklahoma commission on Sept. 22 temporarily suspended an order granting increases to Southwestern Bell on paystation calls from 5 cents to ten cents, when protests were registered by a statewide telephone patrons association to the higher charges. The protestants claimed that the new charges were ordered without hearings.

The commission has opened the whole matter for public hearings on Oct. 7.

V V

Loses Suit to Retain Current Taxes to Recoup Overpayment

The Inter-County Telephone & Telegraph Co., Fort Myers, Fla., recently lost a suit to keep back $15,766.52 in 1953 state taxes as a means of recouping part of $31,088.53 in overpayment of past assessments.

Judge Lynn Gerald dismissed the company's suit in response to a motion filed by the office of Richard W. Ervin, state attorney general. Ervin said that the company's action was without authority under law to withhold currently due taxes in settlement of alleged overpayments.

Inter-County had stated in its complaint that it withheld the monies because state officials acknowledge the overpayments but refuse to pay back the overcharge. State Comptroller C. M. Gay had informed Inter-County that his office was without authority to issue state warrants to cover the overcharges.

The company paid more than the required taxes because of a bookkeeping error, according to the company's bill of complaint.

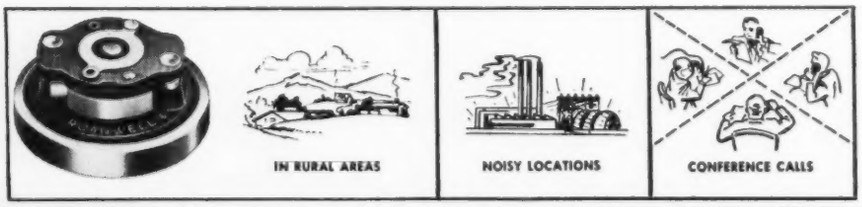
V V

Kansas Company Granted Raise

The Kansas Corporation Commission on Sept. 22 granted the Berryton Telephone Co. a $1,245 annual rate increase, effective Oct. 1.

Now you can end subscribers' complaints of poor voice reception, quickly and inexpensively . . . with the new Roanwell RA-1H receiver. This new element supplies almost 4 times the acoustical energy and its output is about 5 d.b. higher, over the normal speech response range, than receivers commonly in use.

WRITE FOR DETAILED DATA SHEET



R/C Roanwell CORPORATION
662 PACIFIC STREET • BROOKLYN 17, N. Y.

Minnesota Independent Granted Manual, Automatic Rates

The Madelia Telephone Co. on Sept. 20 secured approval of two schedules of increased rates—one for its present manual service and one effective upon conversion to automatic operation—from the Minnesota Railroad & Warehouse Commission.

The commission, in its order, noted that the Madelia company proposes rehabilitation of its physical exchange plant for the purpose of converting the exchange from manual to automatic operation. In the meantime, the company proposes an increase in rates for the present manual operation to cover wage increases granted employes in March.

In the process of completing financing negotiations for the automatic conversion, the lending agency requires that the company have a schedule of rates for automatic service approved before the funds will be advanced, the commission stated.

Following are a table of operating figures and the rates* under the old and new manual schedules and under the automatic schedule:

	Old Manual	*New Manual*	*Automatic*
Operating revenues	$46,168	$ 51,598	$ 56,339
Net income	4,116	7,361	17,527
Original cost of plant		128,593	295,681
Ratio of net income to above		5.72%	5.93%

	Old	*New*	*Automatic*
One-party business	$5.00	$5.75	$6.75
Two-party business	4.25	4.75	5.75
One-party residence	3.25	3.75	4.50
Four-party residence	2.75	2.75	3.25
Rural Multi-party residence	3.00	3.50	4.00

*All rates to be billed monthly in advance and a discount of 25 cents per month to be allowed on all gross rates if paid on or before the 25th day of the month in which service is rendered.

The Madelia company serves approximately 663 local, 328 rural and 25 switching stations.

V V

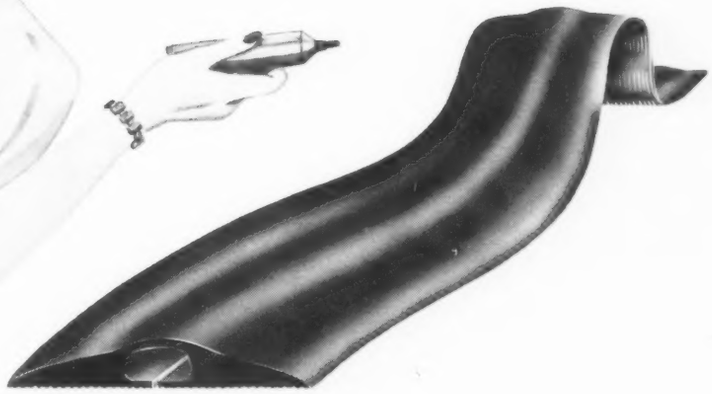
Virginia Independent Awaits Approval of Sale

The Peninsular Telephone Corp., which provides telephone service for Toano, Va., and the immediately surrounding areas in James City and New Kent counties, has agreed to a sale of its franchise to the Chesapeake & Potomac Telephone Co. of Virginia.

The company was recently reported awaiting approval of the sale by the Virginia Corporation Commission and the Federal Communications Commission.

YES!

ANYONE CAN INSTALL



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It's the new rubber floor duct that solves over-floor wiring problems quickly and effectively, with adequate protection from sweepers, mops and equipment on casters. Installation is easy and permanent. You just fasten Flexiduct in place with its own special cement. There's no drilling or necessity to use screws and fasteners. Flexiducts' flexibility allows it to adhere evenly and securely to all types of floor surfaces and it is adaptable for installations ranging from 2 conductors to 25 pair switchboard cables.

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BUCKEYE TELEPHONE & SUPPLY CO.
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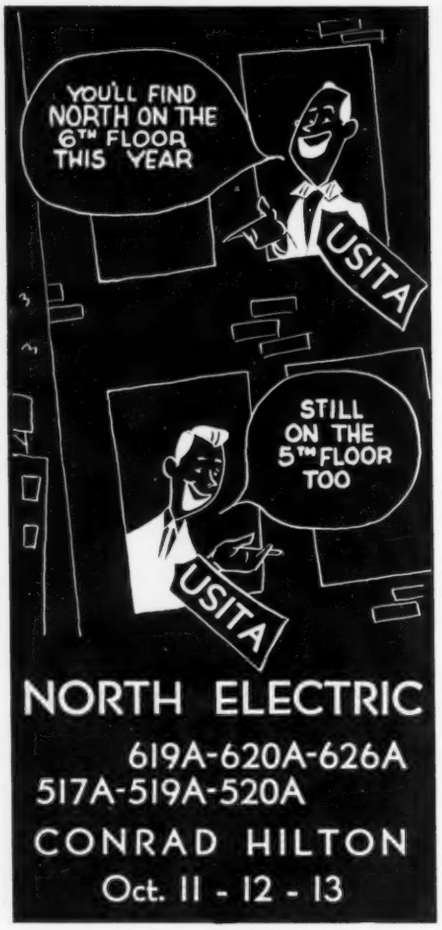

South Carolina Company Granted Certificate

A certificate of public convenience and necessity to provide telephone service on Hilton Head Island has been granted to Har-Gray Telephone & Appliance Co., Inc., Hardeeville, by the South Carolina Public Service Commission.

At a public hearing on Sept. 15, a witness for Har-Gray testified that the petitioner was prepared to furnish telephone service to applicants in the area as quickly as practicable.

Both Har-Gray Telephone and J. A. O'Neal of Greenville applied to the commission for a certificate to construct and operate telephone facilities on the island.

Hilton Head Island was described at the hearing as a rapidly developing resort beach and has more than 100 potential applicants for telephone service.

V V

North Carolina Company To Raise Paystation Rate

The Durham Telephone Co. on Sept. 21 increased from five to 10 cents its charge made on local calls from public paystations, under authorization of the North Carolina Utilities Commission.

At the same time, it announced installation of 50 additional paystations at various points in Durham. The company now has 110 public telephones in operation.

V V

Approve Two Rate Schedules For Oklahoma Company

The Stilwell Telephone Co. on Sept. 23 was granted increased rates, it has been announced by B. Richardson, telephone engineer of the Oklahoma Corporation Commission (TELEPHONY, July 10, p. 32).

Rates authorized provide an increase effective immediately on common battery service, and also a schedule for automatic service, when and if that classification is installed and available. The schedules follow:

	Common Battery	*Dial*
One-party business	$5.50	$6.50
Two-party business	5.00	6.00
One-party residence	3.75	4.50
Two-party residence	3.25	3.75
Four-party residence	...	3.00
Residence, metallic	3.50	4.00

Applying to Coweta, Okla., if and when dial equipment is installed:

	Handset	*Wall*
One-party business	$5.75	$5.50
Two-party business	4.75	4.50
One-party residence	4.25	4.00
Two-party residence	3.00	2.75
Four-party residence	2.50	2.25
Rural business	5.00	4.75
Rural residence, dial	4.00	3.75
Rural line, grounded	2.50	2.25

V V

Oregon Company Requests Raise

The Oregon Public Utilities Commissioner on Sept. 20 set for hearing on Oct. 7 the application of the Redwoods Telephone Co., Cave City, for an increase in rates. The tariff filed by the company was ordered by the commissioner suspended for a period not to exceed 90 days from Sept. 30.

V V

Company Pays in Pole Removal

A municipality in North Carolina can legally require telephone companies and power companies to remove at their own expense utility poles when necessary in a street-widening program, Attorney General Harry McMullan ruled in an advisory opinion on Sept. 21.

V V

To Hear Kansas Purchase Plea

The Kansas Corporation Commission recently set Oct. 26 as the date it will hear the application of the Reno Telephone Co., Hutchinson, to acquire and modernize the Arlington, Cunningham, Pretty Prairie, Sylvia, Langdon, Partridge and Castleton exchanges.

Telephone men know

"YANKEE"

RATCHET BRACES and BIT EXTENSIONS

"Yankee" Ratchet Braces and Bit Extensions are old telephone company friends. Maintenance and installation men know from years of using them the sturdy stuff they're made of, the fine way they're made and how much these tools ease up a job.

The No. 2101 Brace was made with an installer time ticket in mind. It has the famous "Yankee" Ratchet that's easy, positive and quiet. The shifter will not move when you're drilling. Whether your bits have round, square or taper shanks, the quick-centering, ball-bearing chuck holds them accurately, firmly . . . up to ½" diameter. You bore true and fast because the patented sweep handle cancels out excessive play or binding. Practically unbreakable hard rubber handles.

The No. 2150 Bit Extension holds square shanks firmly in an inner socket. Chuck is constructed to accommodate all types of square shanks securely and without jamming. Taper end of shank is accurately machined. Bit cannot loosen while extension is in use. Made to follow 11/16" bit or larger.

Write for free "Yankee" Tool Book

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Philadelphia 33, Pa.
YANKEE TOOLS NOW PART OF STANLEY THE TOOL BOX OF THE WORLD

ALBERT H. HOLLEY (right) of Brooklyn, N. Y., division manager of the New York Telephone Co., is sworn in as director of the Communications Equipment Division, Business and Defense Services Administration (BDSA), U. S. Department of Commerce. The oath of office was administered by CHARLES F. HONEYWELL, administrator of BDSA.

Holley Succeeds Vanstory As Director of CED

The appointment of Albert H. Holley of Brooklyn, N. Y., division manager of the New York Telephone Co., as director of the Communications Equipment Division (CED) of the Business and Defense Services Administration (BDSA), U. S. Department of Commerce, was announced recently by BDSA Administrator Charles F. Honeywell.

Mr. Holley succeeds William A. Vanstory of East Orange, N. J., who has returned to his position as assistant vice president of the New Jersey Bell Telephone Co., after having served BDSA with distinction on loan from his company since February, 1954, under a rotation system in which outstanding business executives provide their services to the government without compensation for periods of six months or longer.

The new division director is a native of Rhode Island. He was born at Providence, and received his early education in the local schools. He served briefly in the Armed Forces during World War I, and after receiving his honorable discharge attended Rhode Island State College (now the University of Rhode Island). In 1921 he was graduated with a degree in engineering.

Mr. Holley entered the employ of the New York Telephone Co. in 1923 as a commercial agent. He has spent the entire time since that year with the same company, chiefly in commercial work. During the early years of his association with New York Telephone, he went to school nights at Fordham University and obtained a law degree in 1928. He is now a member of the New York Bar.

V V

FCC OK's Purchase of Five Independents by Indiana Bell

The Federal Communications Commission (FCC) on Sept. 17 gave final approval to Indiana Bell Telephone Co. for the purchase of five smaller telephone systems in the state.

The five are the Armstrong Telephone Association; the Chandler Home Telephone Co.; the Pike's Peak Telephone Co., Ogilville; the Cayborn Telephone Co. Inc., and the Marrs Township Telephone Co., Mount Vernon.

The FCC action confirmed an earlier recommendation of a hearing examiner.

V V

Asks Stock Issue Authority

The Missouri Public Service Commission on Sept. 13 received the application of the Wright City & Jonesburg Telephone Co. for authority to issue 500 shares of 6 per cent preferred capital stock.

WORK GOES FASTER, EASIER with SEYMOUR SMITH tools

The choice of tree men for generations

No. 11 Pruner Head

Center Cut Action

"TELEPHONE" TREE PRUNERS

The very finest of tree pruners! Virtually unbreakable heads, selected spruce poles with positive locking, seamless aluminum joints. Simple, powerful action. No. 11-18, 1" capacity, $16.25. No. 12-18, complete pruner 1½" capacity, with 18 foot pole, $25.25. Extension sections available.

POLE PRUNING SAW

No. 20 SAW HEAD
Head only $4.40
with 18 ft. pole $16.25

16" needle-tooth saw blade fits in 3 different positions. Extra large hook for pulling out loose branches. Paint brush holder.

LOPPING SHEARS

6 models to choose from. Cut up to 2" branches with ease.

NEW, FINEST EVER PRUNING SAWS

A new Seymour Smith development — the fastest, easiest cutters on the market. Complete line of 6 models covering all requirements up to chain saw work.

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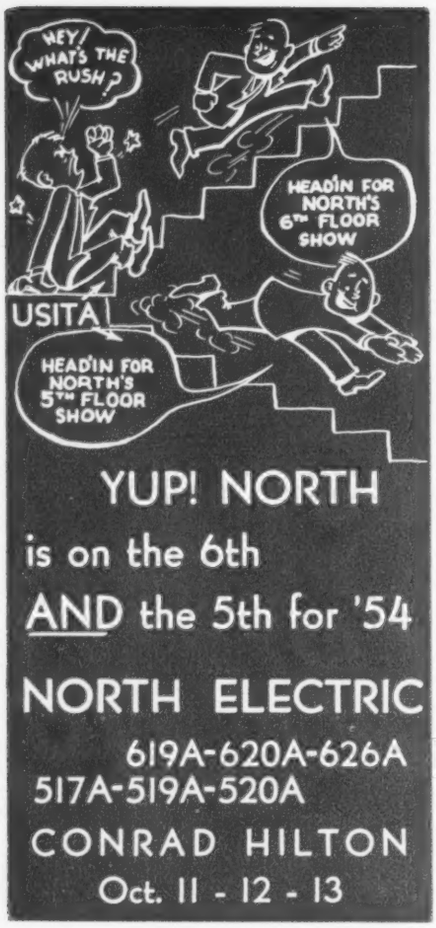

THE OPERATOR'S CORNER

Continued from page 21

phoned, together with the rest of a Sunday morning service, through a transmitter under the pulpit of the Plymouth Church in Brooklyn, N. Y., to specially set up receivers in churches in Newark and Elizabeth City, N. J.

Serious-minded leaders of this era decried the efforts of telephone promoters stating, "Telephones will throw the messengers and errand boys out of their jobs and what will all the poor widowed mothers do then?"

In 1906 when I served as desk clerk for the Postal Telegraph Co., in Springfield, Ill., messenger boys were still on the job and there were times when I heartily wished the prediction of the serious-minded leaders of 1878 would have come true. To the messenger boys, I was just "a gal," too young to have my authority respected, and too big to fight with. What a relief to get into telephone work a year later!

By 1881, telephone promoters were able to report that only nine cities of more than 10,000 inhabitants in the United States, and one of more than 15,000 were without a telephone exchange, and the business of connecting cities and towns by telephone wires had been taken up in the past year with vigor. Boston was in communication with 75 cities and towns including Providence, Worcester, Springfield and Lowell.

In the year 1885, the American Telephone & Telegraph Co. was chartered for the purpose of providing long distance service in the United States.

The first public telephone did much to advertise the service. The early telephone booth, in keeping with the elegance of contemporary hotels, had silk-curtained windows with tiny panes and opaque colored glass in the doors. Hotel guests sometimes mistook them for elevators.

Pay telephones were also introduced in the eighties. The usual principle on which these worked was that the deposit of a coin unlocked something, perhaps the crank with which the user signaled the operator, or a sliding door in front of the mouthpiece. Sometimes the entire telephone was enclosed in a locked box for which a coin served as a key.

One inventor reversed the usual order and located the telephone in a booth having a door which locked behind the user when he stepped inside. After he made his call, the user could

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You don't have to be a Monkey—

. . . to loosen frozen bolts on utility poles. The new Aerosol Kroil, which can be squirted with one finger, loosens the most stubborn frozen metal parts . . . FAST. More than 12,000 shops depend on Kroil whenever frozen metal parts threaten to tie up production or waste manhours. In this new package it is the finest rust-busting tool ever . . . shoots a stream 3 ft. yet won't leak. One customer said, "before trying Kroil we broke off every nut (on our heat treat trolleys), since then we have not lost one and have decreased the repairing time from 30 minutes to about 6 minutes per trolley."

KANO KROIL LOOSENS FROZEN METAL PARTS

Use Kroil on all dismantling jobs; for filing, sawing, honing; . . . also keeps air driven tools running freely.

Just try Kroil on a make good basis. Case of 12 Aerosol Kroil 12 ounce cans $21.60 f.o.b. factory or send $2.35 for one can postpaid. If it doesn't perform to suit you, return the empty can for refund.

KANO LABORATORIES 1040 THOMPSON LANE NASHVILLE 11, TENNESSEE

escape only by depositing a coin in the door lock. I'll bet there have been times in every operator's life when she has wished for such a contrivance.

One telephone to a subscriber was the custom in those days; not even government officials had extensions on their desks. In the White House there was only one telephone, and President Cleveland answered it himself when the clerks were not on duty. How times have changed, and luckily for us. At the end of 1892, there were approximately 10,000 telephone employes and 240,000 telephones in the United States.

We have every reason to be proud of the telephone industry as a whole and of the harmony and goodwill which exists between the various segments of the industry. To those of us who are engaged in the Independent branch of the telephone industry, we too, are big business today. There are 5,100 Independent telephone companies in the United States. They daily provide service to nine million telephones in more than half of the nation's communities. It's a 1½-billion-dollar industry—double its size of a decade ago—adding telephones at the incredible rate of 5,000 a day!

And the 11,000 cities, towns and villages where Independent telephone companies are growing are located in the heart of this country's most rapidly developing areas. Along new frontiers of industrial and agricultural expansion, 5,100 Independent telephone companies are building a bigger, stronger telephone industry.

The Independent telephone industry's gross plant investment has more than doubled in the last 10 years—and every other major growth factor has nearly doubled. Without the lines of Independents, our nation's long distance service could not exist as we know it today.

We have come a long way since the early 1900's, and the end is not in sight. In fact, we might say we have just begun as we have barely reached the "prime of life stage" in the telephone industry.

Have you ever worked on a long distance call and become so engrossed in completing it that time slipped away from you? Most every operator has, at some time or other. I became so engrossed in writing this article, that I forgot all about time, too.

Traffic Questions

(1) How did telephone operators dress in the early 1900's?

(2) When were pay telephones introduced?

(3) When were operating rules introduced in telephone exchanges?

(4) How many Independent telephone companies are serving the United States today?

(5) Do you think telephone work a good occupation for young girls just starting to work in the business world?

Answers are presented on page 47.

V V

Begin Additional Radio-Relay Route in Southwest

The initial section of a radio-relay route which eventually will stretch 1,000 miles across the Southwest from Los Angeles, Cal., to Amarillo, Tex., has been completed, the Pacific Telephone & Telegraph Co. and the Long Lines Department of American Telephone & Telegraph Co. announced on Sept. 16.

The completed section extends from Los Angeles to Baker, Cal. By construction of a sideleg from Baker to Las Vegas, interconnection for network television was made with station KLAS-TV, Las Vegas.

A second segment of the new microwave route is now being built between Amarillo and Albuquerque and is scheduled for completion by the end of this month. It will bring the first network programs to the state of New Mexico by providing interconnection for two television stations in Albuquerque.

At a later date, when the final section between Baker and Albuquerque is built the entire route will be readied to carry telephone conversations.

The route, on completion, would become the eighth communications highway to cross the great western expanse of the United States. The first was completed 40 years ago, in the summer of 1914.

V V

South Carolina Convention Hotel Changed

The South Carolina Independent Telephone Association convention on Oct. 25 and 26 will be held at the Lafayette Manor, Myrtle Beach, S. C., instead of the Ocean Forest Hotel as originally arranged.

Convention reservations at the Ocean Forest were cancelled because the ownership is now changed, and the hotel will be closed for remodeling.

V V

S. D. Company Seeks Dissolution

The directors of Rosholt (S. D.) Telephone Co. recently filed a petition at the clerk of the court's office in Sisseton, S. D., requesting a decree dissolving the company's corporate existence. A hearing was to have been held on Sept. 15.

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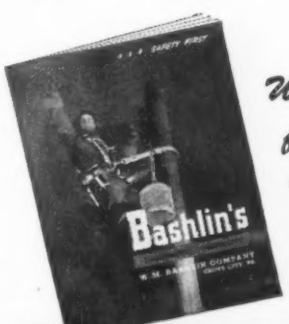
A Full 5 Inches of Body Movement
With Ease and Safety

BASHLIN'S
New Shifting Tool Dee Safety Belt

Next to Safety in the experienced lineman's book, Accessibility of Tools is of first importance in selecting a Safety Belt. This new Bashlin Safety Belt is designed with sliding tool loops . . . keeps tools within easy reach. And the built-in extra safety factor saves the Safety Strap from wear. It's Safe . . . Practical . . . Comfortable . . . and you *know* it's right. It's Bashlin.



Write for this new book

W.M. BASHLIN COMPANY
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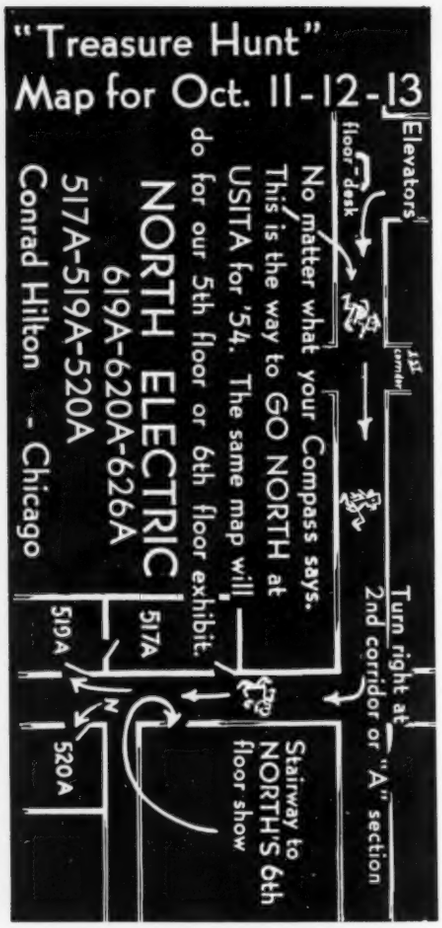

IN THE NATION'S CAPITAL

Concluded from page 25

that if the commission's rate-fixing was out of line with investment at that time, as suggested by the court's decision, it would be more so today.

In a statement released to the press following the high court's ruling, Hugh W. MacDonald, general manager of the company in Massachusetts, declared:

"We have not had the opportunity to study fully the opinion of the court. We note that the case has been recommitted to the Department of Public Utilities (DPU) for further consideration, particularly with respect to increased investment used to furnish Massachusetts telephone service.

"Since the decision by the DPU, about one year ago, our costs in Massachusetts have continued to rise rapidly, as has our investment. The latest investment figure for intrastate Massachusetts operation of 286 million dollars is 25 million dollars higher than the rate base used by the DPU.

"A preliminary review will indicate that the rates requested by the company and denied by the DPU, which have been charged since November, 1953, were no more than reasonable and proper for that period.

"Whether or not these rates will be sufficient for the future, in view of still-increasing costs and investment will require further consideration.

Another FCC Vacancy

George McConnaughey is leading the list of a few names mentioned so far, as a replacement for the vacancy left on the FCC by the recent resignation of George E. Sterling. McConnaughey is a former chairman of the Ohio Public Utilities Commission and he is at present chairman of the Federal Renegotiation Board.

In the latter post McConnaughey has been very successful and has earned the good will and respect of administration officials. He is also a friend of Sen. John Bricker (R., O.), who is chairman of the Interstate Commerce Committee, which has charge of FCC legislation and appointments for confirmation. McConnaughey was at one time president of the National Association of Railroad & Utilities Commissioners. Like Commissioner Sterling he is a Republican.

Commissioner Sterling's resignation became effective Sept. 30 and was based on reasons of health. In accepting it, President Eisenhower thanked the veteran commissioner for his 30 years of government service. Sterling's term would not have expired until June, 1957. If he is replaced by McConnaughey, the latter will get an interim appointment, unless the Senate should decide to go into the matter of confirmations during a possible assembly to consider the report of the special committee concerning the censuring of Senator McCarthy (R., Wis.).

The next regular vacancy on the FCC will not come until next June, when the term of the lady commissioner, Frieda B. Hennock, Democrat, expires.

V V

Oklahoma Commission Grants Independent a Rate Raise

Increased rates were granted by the Oklahoma Corporation Commission to C. E. Berry, doing business as the Willow Telephone Co. as follows:

One-party business	$5.00
Two-party business	4.00
One-party residence	3.50
Two-party residence	3.00
Four-party residence	2.50
Eight-party rural, metallic	3.00

V V

Kansas Company Sale Voted

Sale of the Miami County Mutual Telephone Co., Paola, Kan., to the Southwestern Bell Telephone Co., has been approved by the stockholders of the mutual company (TELEPHONY, Aug. 28, p. 46).

TAKE A BIG STEP TOWARD SAFETY WITH DUO-SAFETY LADDERS

... CUSTOM DESIGNED FOR TELEPHONE MAINTENANCE WORK!

Here's one fine example of the many Duo-Safety ladders ideal for telephone maintenance work.

Type D — a truly great extension ladder built in strict accordance with safety regulations. Rungs are second growth hickory, reinforced with steel rods and equipped with special automatic locks and Duo-Safety's famous Safety Shoes. Made with either straight or parallel side rails, Type D is available in one, two or three sections — in a large variety of sizes. Write for free catalog on all Duo-Safety ladders.

IMMEDIATE DELIVERIES!

Duo-Safety ladders will be shipped immediately upon receipt of order! A planned stock-piling program assures really fast action — there's no delay the Duo-Safety way!

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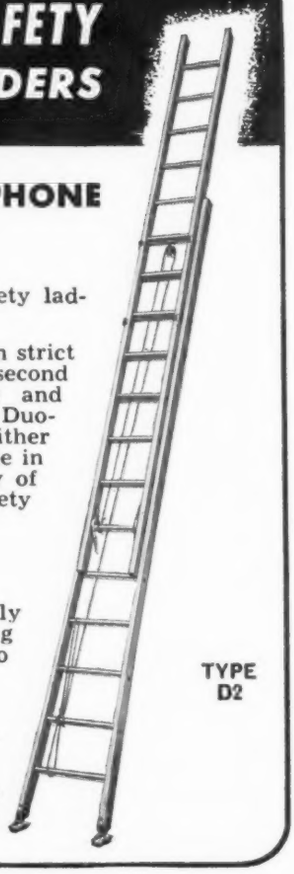


TYPE D2

An Electronic Secretary and an automatic demonstration unit intrigued those who viewed the Illinois Telephone Co.'s above exhibit at the recent Morgan County Junior Fair at Jacksonville, Ill. Thousands of fair-goers viewed the telephone exhibit during a four-day stand, and were given a preview of the new building and automatic telephone plant which is to be cut over late in 1955 at a cost of 1½ million dollars.

Maine Commissioner Suggests Small Company Mergers

Frederick N. Allen, a member of the Maine Public Utilities Commission, declared on Sept. 2 in addressing the Maine Telephone Association convention at Belgrade Lakes that the state commission "certainly would look with favor on any move which would tend to consolidate or merge" small telephone companies.

He added, however, that he did not mean merger with the Bell System.

Although asserting that "there is definitely a place for the Independent telephone company," Allen said they should not be so small they couldn't afford, or obtain credit, to offer their subscribers modern service.

"I think we all regret in a way," he said, "the passing of the days when we could take up a telephone and say 'Hi, Myrtle. Get me Ebenezer Smith at the country store.' There is no doubt but this personalized telephone service . . . served a tremendous need in the life of the community, but times have changed. . . .

"As we look ahead to local, regional statewide and nationwide dialing and extended area operations, we must really say goodbye to Myrtle and keep up with the times."

It is not "economically sensible," he said, to try to run a company with 100 subscribers or less.

V V

Authorize Paystation Raise For Pennsylvania Company

The Pennsylvania Public Utility Commission recently authorized an increase in the paystation rate from five to 10 cents for the Canton & LeRoy Farmers Telephone Co., Canton.

The company, which furnishes service to 1,440 subscribers, said the raise would produce about $250 additional income annually.

V V

Panel Chooses Telephone Over Letter to Collect Overdue Bill

A panel of collection experts voted 2 to 1 on Sept. 12 that a telephone call is better than a letter as a reminder that credit payments are overdue.

The telephone-letter question was one of several points discussed by three Arkansas credit bureau men attending a meeting of the Associated Credit Bureaus of Arkansas in Little Rock.

Two members of the panel said they thought the telephone was the best way to notify purchasers who were slow in making payments. Letters take too long.

The third member of the panel dissented, saying he had learned that customers often can't remember the details of a telephone conversation but a letter has the news down in black and white.

Answers to Traffic Questions On Page 45

(1) A description of their attire is contained in the preface to the questions and answers.

(2) Pay telephones were introduced in the eighties.

(3) Operating rules were introduced in the early 1900's.

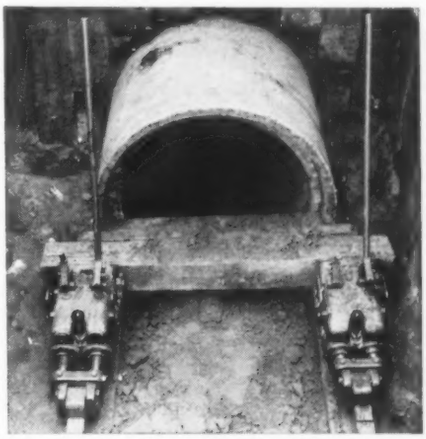
(4) 5,100.

(5) I certainly do. If I had a daughter graduating from high school this year, I would encourage her to seek employment in the telephone industry. It has so much to offer to those who are willing to put forth the effort to succeed.

FAST, EASY WAY TO INSTALL PIPE... AT LOWER COST

PUSH PIPE UNDERGROUND WITH A GREENLEE HYDRAULIC PUSHER

Here's the simple, cost-cutting way to install underground pipe. Speed your jobs with a GREENLEE Pusher. One-man-operated, portable, simple to operate. No tearing up of pavement . . . eliminates extensive ditching, tunneling, backfilling, tamping, repaving. Cuts job time to a fraction. GREENLEE Hydraulic Pipe Pusher often pays for itself on first job. Two sizes — model shown above for pushing 3/4" to 4" pipe. Larger unit, below, for pipe over 4", concrete sewer pipe and large drainage ducts. Power pump (as shown above) also available for extra ease and speed of operation.



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So we've added 3 rooms up on the 6th floor

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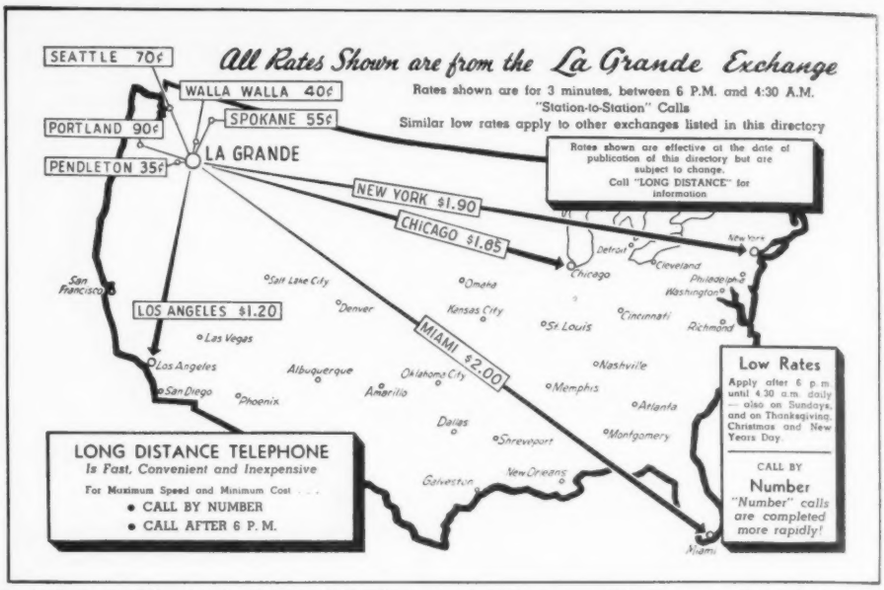
Oct. 11 - 12 - 13



A typical example of a West Coast Telephone Co. directory long distance map. This will be used in the directory for La Grande, Ore., to be published by the company in November.

Map in Directory Facilitates Finding Long Distance Rates

Telephone directories published recently by the West Coast Telephone Co. of Everett, Wash., contain an innovation. The standard lists of "Rates to out-of-town points" have been eliminated in favor of maps which convey the essential information at a glance.

Instead of long columns of place names with long distance rates set up in small type, there are skeleton maps of the United States, showing the night rates applicable to a few nearby, middle distance and far-off points, set up so that anyone can quickly gain a rough idea of the cost of the call he proposes to place.

"Our thought about it," said L. A. Gritten, sales and directory supervisor for West Coast, "is that most people dislike poring through lists of names in small print. For example, if John Doe wishes to know what it will cost him to telephone from La Grande to some point in Ohio, a glance at the map tells him that a three-minute station call will cost him something between the $1.65 rate to Chicago and the $1.90 rate to New York.

"That is all he wants to know. Precise accuracy would not please him as much as the ability to get the essential idea fast and easily.

"When we publish a mass of information in small print and hopefully expect our public to read it, we disregard one important fact: More than 25 per cent of Americans who are old enough to read are over 50 years of age, definitely in the 'bifocal blink' category. It is bad enough to inflict 6-point or 7-point subscribers' listings upon them; that cannot be helped. But why advertise our most profitable service in a form that may not be read easily by some 30 or 40 millions of our customers?"

V V

"In a system of free enterprise, a man must be able to exercise the right to do business where he chooses."— Haverhill (Mass.) *Gazette*.

Haley's

CEDAR POLES and FIR CROSS ARMS

LOW CONDUCTIVITY AND SAFER WITH PENTACHLOROPHENOL FULL-STRENGTH TREATMENT

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LONGER LIFE
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CUT OFF HERE
2-Way "Hex" Shank fits both Bit Brace and Electric Drill Chucks

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"HEX" SHANK
WOOD BITS

Use new Irwin Two-Way "Hex" Shank wood bits in Bit Brace. Remove and use in Electric Drill. "Hex" Shank fits both — perfectly! No wobble, no runoff. Speed up work on the job. Reduce replacement stock and handling by 50%. Sizes 4/16" to 17/16". Call your mill supply distributor, or hardware wholesaler for details and prices. Irwin — Wilmington, Ohio.

IRWIN HEX SHANK WOOD BITS

Kellogg Switchboard & Supply Names Hollis as Sales Manager

Appointment of W. P. Hollis, formerly assistant sales manager, as sales manager of Kellogg Switchboard & Supply Co., Chicago, has been announced. Mr. Hollis will report to C. D. Manning, vice president.

Well known in the telephone industry, Mr. Hollis began his career in 1928 with the Northwestern Bell Telephone

W. P. HOLLIS

Co., and later served as general commercial manager of the telephone properties of Central Telephone Co.

Before joining Kellogg in January, Mr. Hollis was sales manager of the telephone and microwave divisions of Federal Telephone & Radio Co. He had previously served as sales promotion supervisor and contract termination manager for International Standard Electric Corp., as well as commercial director for an associated company in Brazil.

As sales manager, Mr. Hollis takes over most of the responsibilities formerly held by F. M. Parsons who passed away in May, 1954.

V V

Graybar To Sell Equipment Made by U. S. Instrument Corp.

United States Instrument Corp., Summit, N. J., has announced plans to manufacture major items of telephone equipment on a substantial scale. This new equipment, to be distributed nationally by Graybar Electric Co., will include dial telephone central office switchboards specially tailored to meet the requirements of the Independent telephone industry, the company stated.

United States Instrument Corp. (USI), founded 18 years ago under the leadership of its president, Herbert R. Warnke, has been a major factor in the sound powered telephone and other communications field, serving both civilian and government customers, according to the announcement.

During World War II, United States Instrument developed sound powered equipment which was typed as standard by the U. S. and British navies for use on combat vessels; designed and produced radar switches and accessories and other specialized communications components and complete systems. The company also served as lead contractors (furnishing engineering specifications and design and tool specifications) and acted as supervisor to other producers which were requested by the Navy as alternate sources of supply.

The Graybar Electric Co., who became USI's distributor shortly after the war, has in recent years collaborated with USI on a number of problems to meet the special requirements of the Independent telephone companies. Notable among the problems solved successfully and put into production is the multi-frequency ringer developed especially for party line use with the Western Electric 500 type telephone sets, USI stated.

USI stated that in order to broaden the scope of its activities and to provide Graybar with a source of telephone equipment not heretofore available, it negotiated a license agreement with Siemens & Halske, A. G. Munich, Germany. Siemens & Halske, according to USI, is the second largest manufacturer of telephone equipment in the world and is also the largest manufacturer of telephone equipment outside the United States.

USI will not only be licensed to manufacture under the Siemens & Halske patents in the United States, but will be able to draw on the German company's engineering facilities to supplement its own organization in the development and production of items needed by Graybar's customers.

In order to handle the contemplated increase in production and provide additional space for engineering and development, USI has commenced the construction of a new plant in Charlottesville, Va. It is planned to transfer the entire operations and general office of the company to Charlottesville before the end of the year. The plant will be of the most modern design and the layout provides maximum flexibility, so that production can be expanded as rapidly as required, the company states.

Some of the new USI equipment will be exhibited by Graybar Electric Co. at the annual convention of the United States Independent Telephone Association.

Type S-1
Subscriber Carrier

MEMO:

We are not shipping our carrier as we would like!

Each installation deserves and is receiving personalized attention from our own crews!

We can't do this and also enjoy visiting with you folks in Chicago.

Ted McElroy — he ain't much use on this carrier job. He'll probably be at the Conrad Hilton as our U S I T A "Greeter".

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The proved and standard protection for Underground Telephone Cables. Highest quality and full line of shapes.

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They're both right. We'll be on the 6th AND the 5th at USITA This Year

NORTH ELECTRIC
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Reduce installation costs

in underground cable systems

Transite* Ducts speed installation. Lightweight, long lengths are easy to assemble; save time and labor.

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Transite Ducts ease cable pulling. Smooth bore reduces friction and abrasion . . . permits easy insertion or removal of cables.

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For the complete story, write Johns-Manville, Box 60, New York 16, N. Y.
*Reg. U. S. Pat. Off.

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TRANSITE CONDUIT
for use exposed and underground without concrete encasement

Reilly Appoints R. S. Hinkle To Protective Coating Sales

Announcement has been made recently by J. H. Barnett Jr., general sales manager, Reilly Tar & Chemical Corp., of the appointment of Robert S. Hinkle as a member of the company's protective coating sales group.

R. S. HINKLE

A recent graduate of the University of Illinois, Mr. Hinkle served with the U. S. Army Air Force in the European Theatre of Operations during World War II.

Mr. Hinkle will have his headquarters in Granite City, Ill., where he will be associated with the Reilly group headed by E. E. Goodman, district manager.

V V

GE Appoints Sales Manager for Industrial Electronic Products

Walter E. Sutter has been appointed manager of sales for instruments and industrial electronic products of the commercial equipment department of the General Electric Co., Syracuse, N. Y., it was announced on Sept. 3.

Mr. Sutter will make his headquarters at Electronics Park, according to Frank P. Barnes, marketing manager of the company's broadcast equipment product department, who made the announcement.

In his new position, Mr. Sutter will be responsible for the national sales of General Electric electronic instruments such as laboratory power supplies, frequency meters, beta-gamma survey meters; and industrial electronic equipment such as industrial (closed circuit) television and factory automation.

He is a native of Elizabeth, N. J., and was graduated in 1945 from Rensselaer Polytechnic Institute, with a degree in electrical engineering.

Mr. Sutter joined General Electric in 1946 in the company's engineer test program. From that time until his present appointment, he has been associated with the company's microwave application and sales section, serving in various positions including that of commercial engineer.

Mr. Sutter holds two patents on microwave equipment and has written several papers on the design of microwave communication equipment.

V V

Holtzer-Cabot Names Winner Of Oldest Motor Contest

The Holtzer-Cabot Divisions of the National Pneumatic Co., Inc., Boston, Mass., have announced the winner of the companies' $100 reward for information concerning the oldest Holtzer-Cabot motor still in operation in the telephone industry. The recipient is W. E. Matthews, manager of the Augusta (Ill.) Mutual Telephone Co.

The Augusta company owns a Holtzer-Cabot motor-generator set built in 1899, a belt-driven unit which is still in good operating condition, the company reports. The set has been used as a standby for the past few years.

National Pneumatic Co., Inc., and Holtzer-Cabot Divisions sponsored this contest in order to obtain information that would complete their records on early Holtzer-Cabot motors. The Holtzer-Cabot Divisions, which specialize in the design and manufacture of fractional and subfractional horsepower motors, have been among the leaders in the field since 1875.

V V

World-Wide Telephone Directory Gives 250,000 Numbers

A Paris company has published what it claims to be the first world-wide telephone directory, with 1,700 pages and 250,000 numbers, reports a Reuters dispatch of Sept. 24.

The directory, in English, French, German, and Spanish, groups under activities and professions the "main telephone numbers of the world," including those of the Communist countries. But the directory gives only 21 telephone numbers in Russia—all of them of official bodies, the report states.

V V

"The people are entitled to know what their servants are doing—and have a right to be represented at meetings of governmental bodies by newspaper reporters. That's why the Founding Fathers put into our Constitution a provision guaranteeing freedom of the press." — Port Huron (Mich.) ***Times Herald.***